

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

DAVID BAILEY, ET AL * 4:14-CV-01698
*
VS. * 9:09 A.M.
*
BRAD LIVINGSTON, ET AL * MAY 27, 2016

HEARING ON PRELIMINARY INJUNCTION AND CLASS CERTIFICATION
BEFORE THE HONORABLE KEITH P. ELLISON
Volume 2 of 4 Volumes

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PROCEEDINGS

2

THE COURT: Good morning. Welcome back.

3

ATTORNEYS: Good morning, Your Honor.

4

THE COURT: You want to call your witness?

09:08:53

5

MR. GREER: Your Honor, before we proceed, where we broke yesterday, we reached an agreement on the acceptance of Defendants' Exhibit No. 11, the affidavit of Robert Gavin Jones.

9

THE COURT: Admitted without objection.

09:09:05

10

Okay. Give it to Ms. Vogel, if you would.

11

MR. EDWARDS: Just to confirm for the record, all of the exhibits that were attached to plaintiffs' preliminary injunction were offered into evidence. We can -- we can put exhibit stickers on them if it eases the Court's burden. If not, we weren't planning on doing that. And then the defendants' and the plaintiffs' summary judgment motion exhibits were also exhibits, as were also the class certification exhibits. I just want to make sure that's accurate.

09:09:18

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MR. GREER: In terms of the class certification and summary judgment exhibits, I think for this purpose and the class certification purposes we were in agreement. In terms of their exhibits attached to the injunction, those we had not discussed; and those we do not have an agreement on. I know there were certain portions of

1 deposition transcripts --

2 THE COURT: Okay. Okay. We'll take a look at
3 that.

09:09:56

4 The ones you do agree on, we probably need to number
5 them.

6 MR. EDWARDS: Okay.

7 THE COURT: Each one of them, shouldn't we? I
8 mean, aren't they large enough that just having one number
9 for each would be confusing?

09:10:03

10 MR. GREER: I'm sorry?

11 MR. EDWARDS: They are already filed. They
12 weren't objected to except for one.

09:10:14

13 THE COURT: I'm not quibbling about the
14 objections. I'm just wondering how we ought to -- do they
15 have numbers on them now?

16 MR. EDWARDS: They don't. We can easily put them
17 on following today's witness.

18 THE COURT: Let's talk about that later then.
19 Yes, sir.

09:10:23

20 MR. MOCZYGEMBA: Your Honor, as the Court is --
21 I'm sorry. My name is Kevin Moczygemba. We didn't have
22 an opportunity to meet yesterday.

23 THE COURT: Yes, sir.

09:10:31

24 MR. MOCZYGEMBA: As the Court is aware, we had
25 filed a Daubert motion proposing that we take up the

1 hearing on Daubert for the class cert hearing and
2 injunction, taking it from the testimony today and that we
3 will finalize our objections after we have taken the
4 testimony.

09:10:42

5 THE COURT: That's fine. I have reviewed your
6 Daubert motion. Again, I'm sitting without a jury. So
7 I'm less worried about someone overinterpreting an
8 expert's competence or overinterpreting an expert's
9 conclusions. I think the two witnesses you've challenged
10 are -- I'll listen to the argument, but I do believe they
11 pass the Daubert standard.

09:11:02

12 MR. MOCZYGEMBA: Yes, Your Honor. Would you like
13 me to briefly cover those?

09:11:12

14 THE COURT: Well, I would rather get to the
15 testimony. We can take up --

16 MR. MOCZYGEMBA: During the testimony. Really, I
17 believe what we are asking for at this point is, you know,
18 limits for, you know, which go to the weight of the
19 testimony of the experts, not to exclude.

09:11:24

20 THE COURT: Okay. Thank you. All right. Ready
21 to proceed.

22 MR. EDWARDS: Plaintiffs call Michael McGeehin.

23 THE COURT: Mr. McGeehin, good morning. If
24 you'll make your way up here.

09:11:41

25 MR. EDWARDS: Just for the clarity of the record,

1 this is for class certification and for the preliminary
2 injunction.

3 THE COURT: We'll have you in the seat nearest
4 me. Before you take your seat, Ms. Loewe will administer
09:11:50 5 the oath.

6 (Witness sworn by the case manager.)

7 THE WITNESS: I do.

8 THE COURT: Please proceed.

9 MR. MEDLOCK: Thank you, Your Honor. Can we get
09:12:09 10 the AV sent to the computer. Thank you.

11 **MICHAEL McGEEHIN,**
12 having been first duly sworn, testified as follows:

13 **DIRECT EXAMINATION**

14 BY MR. MEDLOCK:

09:12:21 15 **Q.** Good morning, Dr. McGeehin. Can you please state your
16 name for the record.

17 **A.** It's Michael A. McGeehin, M-c-G-e-e-h-i-n.

18 **Q.** And, Dr. McGeehin, I want to start with just going
19 over your background. Can you take a look at Tab 1 in
09:12:41 20 your binder there?

21 **A.** Yes.

22 **Q.** And would you state for the record what is in there?

23 **A.** This is a tab -- under Tab 1 is my professional CV.

24 **Q.** And would you just kind of walk us -- walk the Court
09:12:59 25 through your background. What have you done for your

1 living, what has been the focus of your career and just
2 give us the basics?

3 **A.** Okay. Well, for 33 years I was a scientist with the
4 Centers for Disease Control and Prevention. I am a
5 Ph.D-trained environmental epidemiologist.

09:13:13

6 I have -- my career ended at CDC. I was division
7 director of the division at CDC for environmental
8 epidemiology. The actual -- in the National Center for
9 Environmental Health. The actual name of the division is

09:13:30

10 the Division of Environmental Hazards and Health Effects.

11 In that position, all environmental epidemiology at CDC
12 fell under me. I, basically, either conducted or oversaw
13 all the studies dealing with environmental contamination
14 at CDC, including heat. I was the CDC point person on
15 climate change for over a decade.

09:13:51

16 I ended my career at CDC in 2010 and was a senior
17 environmental health epidemiologist at the Research
18 Triangle Institute in North Carolina for two and a half
19 years. Since then I have been retired and consulting with
20 RTI and others.

09:14:11

21 **Q.** Kind of where were you in the hierarchy of the CDC at
22 the time of your retirement?

23 **A.** Well, there is a CDC director, then there is the
24 center directors and then there's the division directors.

09:14:25

25 **Q.** You would be the third layer from the top?

1 **A.** Third layer of scientific leadership at CDC.

2 **Q.** Now, you mentioned that the environmental hazards
3 division that you were the head of dealt with the CDC's
4 concerns about heat. Were there any other environmental
5 hazards that you also kind of oversaw in your division?

09:14:42

6 **A.** Well, all the hazards that you can think of for the
7 environment that might impact human health may come into
8 that division. People don't always understand what CDC
9 does and how it operates, but one of the main operations
10 of CDC is to respond to requests and concerns from state
11 health departments and county health departments and other
12 nations on issues that they are dealing with.

09:14:58

13 So as you can imagine, anything that has to deal with
14 environmental health may come to us at any given time. So
15 water contamination, soil contamination. When I was with
16 the previous branch, the health investigations branch,
17 part of ATSDR, we also dealt with Superfund sites and all
18 that type contamination. So within my career at CDC, I
19 have seen virtually everything that might be considered
20 environmental contamination.

09:15:14

09:15:35

21 **Q.** You used an acronym there ATSDR. Can you say what
22 that is for the record?

23 **A.** Yeah. ATSDR is an agency that was created out of a
24 bill. It is called the Agency for Toxic Substances and
25 Disease Registry. It is essentially a part of the Centers

09:15:51

1 for Disease Control. It has a separate name, but it's
2 included in the National Center for Environmental Health.

3 **Q.** Would it be fair to say that your division of CDC
4 focused on preventing and controlling illnesses that were
5 related to the environment?

6 **A.** Yes. And also reducing and controlling exposures
7 where possible.

8 **Q.** As your -- in your role as the director of
9 environmental hazards at CDC did you investigate any heat
10 events?

11 **A.** Well, yes. I mean, we did -- CDC did most of the
12 early work on heat before my time, thankfully. In 1980 we
13 did the initial study of the St. Louis heat wave.

14 Before I came to the health studies branch as branch
15 chief, we did a study of the Philadelphia heat wave in
16 1970 -- I mean, 1993.

17 In 1995 was the major heat wave in Chicago, and we did
18 two studies that followed that.

19 In 1999 we did a follow-up study in Chicago, and we
20 also did a small study in Cincinnati.

21 We have worked with the states as they have done some
22 of their studies.

23 And in 2003 I was name requested by the health
24 minister of France through the embassy, the French
25 embassy, to go over and assist them in dealing with the

1 heat wave that hit France in August of 2003.

2 **Q.** Now, you mentioned that you have consulted with state
3 and local governments. Can you give me some examples?

4 **A.** Well, obviously, St. Louis, Chicago, Philadelphia,
5 Cincinnati, Milwaukee, all of those cities had to request
6 us to come in to do those studies and to assist them.

7 In addition to that, in work that I did that was
8 published in a separate article, we have worked -- we did
9 work, while I was there, with cities, municipal
10 governments and some county governments, in trying to help
11 them prepare a complete and comprehensive heat wave
12 response plan to prepare for eventuality of a major heat
13 wave hitting their community.

14 **Q.** Is one of those cities you worked with the city of
15 Houston?

16 **A.** I did -- I did respond to Houston. I don't remember
17 the details, but I remember that Houston did call us up
18 in -- I think it was preparing a heat wave response plan,
19 but I don't remember the details of that.

20 **Q.** Okay. And there were -- you mentioned foreign
21 governments that you have advised. Aside from the
22 government of France that you mentioned, what other
23 foreign governments have you advised?

24 **A.** That's going to be difficult to come up with a
25 comprehensive list. Just during the European heat wave,

09:18:51

1 I, myself, talked to people in Germany and in Spain. I
2 worked extensively with Canada on heat. I worked with
3 Mexico, consulted with Panama, consulted with Peru,
4 consulted with Brazil. I am sure that I am missing a
5 couple.

09:19:08

6 **Q.** And, Doctor, do you hold any academic appointments?

7 **A.** At this point in time I have let the academic
8 appointment of adjunct professor that you have here at
9 Emory University go because I have left the Atlanta area,
10 and it's difficult to do that.

11 **Q.** How long were you an adjunct professor?

12 **A.** About a decade.

13 **Q.** What did you teach at Emory?

14 **A.** Environmental epidemiology.

09:19:18

15 **Q.** Did the course work you taught, was any of that
16 related to heat?

17 **A.** Well, the course work, I was asked to come in and do
18 lectures in other courses that were -- full-time
19 professors were working on. That's how adjunct

09:19:32

20 professorships usually work, at least at Emory with CDC
21 right across the street. So I would come in and talk
22 about certain issues. One of the issues that I might have
23 talked about would have been heat waves, the health
24 effects of heat waves, how we investigate heat waves and
25 heat wave response plans.

09:19:46

1 MR. MEDLOCK: Now, David, if you'll play the
2 slides.

3 Q. (By Mr. Medlock) Dr. McGeehin, have you published any
4 peer-reviewed articles related to heat?

09:19:57

5 A. Yes. These are some that are on that list right now.
6 In addition to these, in the first national assessment of
7 climate change that was done that was requested by the
8 administration from Congress, I wrote the -- I co-wrote
9 the heat section in that report.

09:20:17

10 And in the latest, the third national assessment, I
11 wrote the heat section in that report, which was a much
12 smaller heat section because the report was much more
13 brief.

14 Q. Have you written other peer-reviewed articles on other
15 topics on heat?

09:20:32

16 A. Oh, yeah. Yes.

17 Q. How many total peer-reviewed articles?

18 A. I don't know. I'm too old to keep up with that. I
19 think it's somewhere between 65 and 72 or something like
20 that.

09:20:42

21 Q. Okay. And when you write those peer-reviewed
22 articles, did you -- when you wrote your report in this
23 case, did you apply the same kind of rigor to your report
24 in this case as you would to those academic peer-reviewed
25 articles?

09:20:54

1 **A.** Yes. It's a different sort of writing, but yes.

2 **Q.** And, Doctor, I'm going to refer you to Tab 3 of your
3 binder there. And this is one of the academic articles
4 you wrote for the American Journal of Preventative
5 Medicine in 2008, correct?

09:21:26

6 **A.** Yes.

7 **Q.** And your co-author there is Dr. George Luber?

8 **A.** Yes.

9 **Q.** And the title of this article is "Climate Change in
10 Extreme Heat Events"?

09:21:37

11 **A.** Yes.

12 **Q.** We would like to go ahead -- and does this appear to
13 be a full and complete copy of the article?

14 **A.** Yes.

09:21:53

15 MR. MEDLOCK: We would like to go ahead and move
16 to admit this as Plaintiffs' Exhibit No. 5.

17 MR. MOCZYGEMBA: No objection.

18 THE COURT: Admitted without objection.

19 **Q.** (By Mr. Medlock) If you would turn to the next tab,
20 Doctor. Is this an article from the American Journal of
21 Public Health?

09:22:06

22 **A.** Yes.

23 **Q.** And this article is also peer reviewed?

24 **A.** Yes.

09:22:14

25 **Q.** And you wrote this one with Dr. Susan Bernard?

1 **A.** Yes.

2 **Q.** And the title of this one is "Municipal Heat Wave
3 Response Plans"?

4 **A.** Right.

09:22:29

5 **Q.** Can you look that one over to make sure it's complete?

6 **A.** We already did. It is complete.

7 MR. MEDLOCK: We would move to admit this one as
8 Plaintiffs' Exhibit No. 6.

9 MR. MOCZYGEMBA: No objection.

09:22:39

10 THE COURT: Admitted without objection.

11 **Q.** (By Mr. Medlock) And if you could move to the next
12 tab in your binder, Doctor.

13 **A.** Yes.

14 **Q.** This one is from the Environmental Health Perspectives
15 Journal?

09:22:51

16 **A.** Yes.

17 **Q.** Is this also a peer-reviewed academic journal?

18 **A.** Yeah. All of my publications are in peer-reviewed
19 academic journals.

09:23:01

20 **Q.** Okay.

21 **A.** But, yes. The answer is yes.

22 **Q.** This one your lead co-author was Jonathan Patz?

23 **A.** From the University of Wisconsin, yes.

24 **Q.** The title of this one is "Potential Health Effects of
25 Climate Variability and Change for the United States:

09:23:10

1 Executive Summary of the Report of the Health Sector of
2 the U.S. National Assessment"?

3 **A.** Yes. I co-chaired that health sector.

4 **Q.** Co-chaired it with Mr. Patz -- Professor Patz or
5 Dr. Patz?

6 **A.** Yes.

7 **Q.** Does this appear to be a full and complete copy of
8 that article?

9 **A.** Yes, it does.

10 MR. MEDLOCK: We'll move to admit that one as
11 Exhibit 7.

12 MR. MOCZYGEMBA: No objection.

13 THE COURT: Admitted without objection.

14 **Q.** (By Mr. Medlock) Then if you could skip one and go to
15 Tab 7 of your binder, Doctor.

16 **A.** Yes.

17 **Q.** This is another article from the American Journal of
18 Preventative Medicine in 1999; is that correct?

19 **A.** Yes.

20 **Q.** And the title of this one is "Excess Hospital
21 Admissions During the July 1995 Heat Wave in Chicago"?

22 **A.** Yes.

23 **Q.** And your co-author here is Dr. Semenza?

24 **A.** John Semenza, yes.

25 **Q.** Does this also appear to be a full and complete copy

1 of that article?

2 **A.** I just have to check the references. Give me a
3 second.

09:24:37

4 MR. MEDLOCK: We would like to move to admit that
5 one as Plaintiffs' Exhibit No. 8.

6 MR. MOCZYGEMBA: No objection, Your Honor.

7 THE COURT: Admitted without objection.

09:24:48

8 **Q.** (By Mr. Medlock) Now, there are two other articles
9 that I would like to just briefly discuss and get into the
10 record with you, Doctor. If you could go to Tab 11 of
11 your binder, please.

12 **A.** Yes.

09:25:11

13 **Q.** This is the "Heat Wave Death and Mental Illness During
14 the 1999 Cincinnati Heat Wave" from the American Journal
15 of Forensic Medicine and Pathology. Is that accurate?

16 **A.** Yes.

17 **Q.** And you did not contribute to this study, correct?

18 **A.** No, not as an author. However, this was my branch.

19 **Q.** Okay. What do you mean by that, for the Court?

09:25:19

20 **A.** Reinhardt Kaiser, Carol Rubin, Aldin Henderson,
21 Stephanie Kieszak all worked for me.

22 **Q.** They all worked under your supervision?

23 **A.** Yes.

09:25:31

24 **Q.** Do you consider this article to be just as reliable as
25 one of the ones you wrote yourself?

1 **A.** Oh, sure. Oh, absolutely, yeah.

2 **Q.** Does this appear to be a full and complete copy of
3 that article?

4 **A.** It does.

09:25:38

5 **Q.** And this was also published in a peer-reviewed
6 journal?

7 **A.** Yes.

8 **Q.** Okay. And this is something that you would commonly
9 rely upon in your field?

09:25:47

10 **A.** Peer-reviewed journals invariably, yes.

11 MR. MEDLOCK: We'll go ahead and move to admit
12 this one as Plaintiffs' Exhibit No. 9.

13 MR. MOCZYGEMBA: No objection.

14 THE COURT: Admitted without objection.

09:26:07

15 MR. MEDLOCK: And I have one more. May I
16 approach, Your Honor?

17 THE COURT: You may.

18 **Q.** (By Mr. Medlock) Doctor, I had to give my copy up.
19 So if you could tell us what journal that's from and what
20 the title is?

09:26:50

21 **A.** This is from Environmental Health Perspectives in
22 February of 2016. And the title of the article is
23 "Multiple Trigger Points for Quantifying Heat Health
24 Impacts: New Evidence from a Hot Climate."

09:27:06

25 **Q.** And when was that article published?

1 **A.** This was in February. Just this year.

2 **Q.** Okay. And who is the lead author on that study?

3 **A.** Diana Petitti.

4 **Q.** Okay. And have you had a chance to review that
5 article?

09:27:20

6 **A.** I did, yes.

7 **Q.** Okay. Did you find it to be reliable from your work
8 as an epidemiologist?

9 **A.** I found that it was an excellent article. I was
10 really interested in reading it and its findings.

09:27:30

11 **Q.** Okay. And is it the type of article that you would
12 typically rely on in your field of epidemiology?

13 **A.** This is a huge article for the public health impacts
14 in the United States on climate change. This is a very
15 important article.

09:27:44

16 **Q.** Okay. Terrific. We'll talk some more about that in
17 detail in just a moment.

18 **A.** Yes.

19 MR. MEDLOCK: But right now I want to offer to
20 admit it as Plaintiffs' Exhibit No. 10.

09:27:50

21 MR. MOCZYGEMBA: No objection.

22 THE COURT: Admitted without objection.

23 **Q.** (By Mr. Medlock) All right. Now, have you ever
24 served as an expert witness in litigation before, Doctor?

09:28:08

25 **A.** No.

1 Q. This is your first time?

2 A. First time on this stand, yeah.

3 Q. Therefore, were all your peer-reviewed work written
4 before you became an expert witness in this case?

09:28:20

5 A. Yes.

6 Q. Okay. Doctor, I want to ask you to talk about the
7 field of epidemiology generally. Just kind of give us a
8 brief overview of the field, what you do, kind of what the
9 work is that you do.

09:28:40

10 A. Well, without most people knowing about it,
11 epidemiology is how we prevent disease in the United
12 States and the world. Epidemiology provides the
13 scientific structure and backbone to all of the public
14 health actions and many private health actions.

09:28:59

15 Basically, what epidemiologists do is they look at the
16 association or links between something and health
17 outcomes. That something can be exposures. That
18 something can be mosquito bites, vector-borne diseases,
19 things like that. They can be environmental exposures.

09:29:21

20 And the other thing that we do is we look at other
21 factors that may impact that risk that we're seeing in
22 that association. Without epidemiology, we are unable to
23 really determine what the association is and unable, then,
24 to put plans in place that can mitigate our risk for

09:29:42

25 those.

1 Now, that's all theoretical. In a practical
2 standpoint, to give you an example of that, there was a
3 great deal of consternation recently about the Zika virus
4 and its movement into South and Central America. And this
5 would be the first virus that we ever had that was
6 transmitted by a mosquito that had adverse reproductive
7 outcomes. And that's a huge public health problem.

8 And this particular problem -- public health problem
9 is microencephaly. So a baby is born with a central
10 nervous system compromised and basically has to be --
11 those that survive have to be cared for for the rest of
12 their lives. So it's got huge ramifications.

13 The press got ahold of it and immediately said, well,
14 the Zika virus causes this problem. And if you remember,
15 if you followed it carefully, CDC said we don't know that.
16 We don't know that; and, therefore, we can't plan
17 interventions to intervene in that until we know that
18 association.

19 And it -- probably none of you followed this as
20 carefully as I did. That's good for you. But what had to
21 happen was CDC had to send two teams down to investigate
22 whether or not we really were seeing an increase in
23 microencephalic babies down there. When that
24 investigation was finished, CDC came back and with the
25 World Health Organization said we do have enough evidence

1 for this and now we need to put in place a plan to deal
2 with it. That's a specific example of what epidemiology
3 does.

09:31:27

4 What epidemiology also does is keep track of diseases.
5 So, for example, if you think that a cancer is increasing
6 or decreasing and what the possible reasons for that might
7 be, that's epidemiology that first tells you whether it's
8 increasing or decreasing. And then, epidemiology tells
9 you what we are doing that may be effective or not
10 effective in reducing the risk of that cancer.

09:31:45

11 THE COURT: Let me slow you down just a little
12 bit. She has got to stay up with every word.

13 THE WITNESS: Oh, I'm sorry. I'm sorry. I tend
14 to get going.

09:31:59

15 THE COURT: We all do that.

16 **A.** So, essentially, epidemiology provides a science of
17 public health.

18 THE COURT: A science of what?

19 THE WITNESS: Public health.

09:32:06

20 THE COURT: Okay.

21 **Q.** (By Mr. Medlock) Is it fair to say that an
22 epidemiologist looks at health hazards, tries to make
23 recommendations for the public to protect those
24 populations that you have identified are at risk?

09:32:17

25 **A.** Well, I hope I did more than 33 years of that; but,

1 yes, that's a fair summary.

2 **Q.** To boil it down to one sentence?

3 **A.** Yeah.

4 **Q.** And what is the purpose of kind of identifying
5 populations that are at risk?

6 **A.** Well, that's -- that's the other thing I talked about.
7 Once you determine the association between an exposure and
8 a disease, it's extremely important for public health to
9 determine who is at the highest risk. And the reason for
10 that is that you have to design your interventions. You
11 have to design the plan that's going to reduce that risk
12 to the people most likely to be affected.

13 And we see that in many other cases beyond heat, but
14 heat is an excellent example of that. When you design a
15 plan to reduce the impacts of heat, you design it around
16 the people who have been shown consistently in various
17 countries over two decades to be at increased risk.

18 **Q.** It's fair to say you are looking for some sort of
19 commonality between people to plan your interventions to
20 protect them from harm?

21 **A.** Yes.

22 **Q.** Now, is there a concept in epidemiology called
23 relative risk?

24 **A.** Yes.

25 **Q.** Can you explain that for the Court?

1 **A.** Well, it's the same as you may hear -- sometimes you
2 will hear a term of odds ratio. It's a different measure
3 of risk. And it's basically determining -- the easiest
4 way that I can describe that to you is a relative risk is
5 a risk of a disease from -- with people who are exposed
6 for -- versus the risk of the disease of people who aren't
7 exposed. So that's your ratio.

09:33:46

8 And depending on the size of the population and then
9 you gets an odds ratio or relative risk ratio. So it
10 is -- it is -- essentially, you can think of it as the
11 role of the exposure to the incidence of the disease.
12 That's one way to think about it.

09:34:08

13 **Q.** Does that kind of measure the magnitude of the risk?

14 **A.** It can measure the magnitude of the risk.

09:34:24

15 **Q.** Is that something -- measuring the magnitude of the
16 risk, is that something you've specifically looked at with
17 regards to exposure to heat?

18 **A.** We have looked at relative risks, yes.

19 **Q.** Okay. And is there a confidence interval that you
20 have for that relative risk exposure to heat?

09:34:41

21 **A.** Well, heat is not that simple.

22 **Q.** Okay.

23 **A.** Heat can't be that simple. I mean, you have to look
24 at what you are talking about as the exposure; and then,
25 you have to look at what you are talking about as the

09:34:52

1 population in this case.

2 For example, the heat risk increases as you get older.

3 France found that -- the study in France found that the
4 increase begins at age 35 and increases steadily from 45
09:35:13 5 to 80, 85, with a rapid increase over 65 and 70. So you
6 don't -- you can break the population down and look at
7 that.

8 But, instead, with heat, we're talking about a
9 steadily increasing risk for -- and different studies will
09:35:31 10 show slightly different odds ratios or relative risks.

11 **Q.** And is that the Stephanie Vandentorren mortality in 13
12 French cities article that we discussed a minute ago?

13 **A.** That's -- we actually, I think, skipped that one, but,
14 yes, that is one --

09:35:45 15 THE COURT: Spell that for the court reporter, if
16 you would, sir.

17 MR. MEDLOCK: Yes, absolutely. Vandentorren.
18 I'm probably butchering it. But V as in Victor, A-N as in
19 Nancy, D as in dog, E-N as in Nancy, T-O-R-R-E-N as in
09:36:02 20 Nancy.

21 THE COURT: Thank you.

22 **Q.** (By Mr. Medlock) I'm sorry. What was the article
23 that we marked about the French?

24 **A.** Well, there was an article that I've referred to quite
09:36:12 25 a bit. It's -- and I'm going to butcher this. I think

1 the principal author is Poillut, P-o-i-l-l-u-t, I think.
2 That is one I have referred to. Here is the one you
3 mentioned, also.

09:36:34

4 **Q.** Let's go -- just for the record, if you would go to
5 Tab 10 in your binder.

6 **A.** Yes.

7 **Q.** This is the Vandentorren study, correct?

8 **A.** Yes.

09:36:52

9 **Q.** And you'd also agree that this is reliable in your
10 field and that it's from a peer-reviewed journal?

11 **A.** It is, certainly.

12 MR. MEDLOCK: We'll go ahead and move to admit
13 that one as Plaintiffs' Exhibit No. 11.

14 MR. MOCZYGEMBA: No objection.

09:37:02

15 THE COURT: Admitted without an objection.

16 **Q.** (By Mr. Medlock) When you look at the risk that heat
17 poses, Doctor, do you look at a population level or an
18 individual level as an epidemiologist?

09:37:24

19 **A.** Well, risks are based on population studies. It's
20 based on the population.

21 **Q.** Can you explain to the Court what you mean by that?

22 **A.** Well, it's -- epidemiologic studies are normally
23 done -- if they are not clinical studies, they are
24 normally done of groups of people where you have

09:37:39

25 sufficient numbers to look at these factors that I have

09:37:55

1 talked about so that you can have the power in the study
2 to determine whether or not something is, in fact, an
3 increased risk and if, in fact, it's statistically
4 significant so that the populations -- the studies are
5 done on populations. They have to be done on populations.

09:38:12

6 **Q.** And what kind of training do you get to be an
7 epidemiologist?

09:38:28

8 **A.** Well, you get a bachelors degree and then you get a
9 master's degree in epidemiology, usually, and a master's
10 in public health or a master's of science in public
11 health. At that point, you are an epidemiologist.

12 And then, some of us who make the foolish decision of
13 then going on to get a Ph.D in the science, but there are
14 many very competent and very good master's-level
15 epidemiologists.

09:38:42

16 Many physicians, after they finish medical school, go
17 and get an MPH; and they are, of course, fully-trained
18 epidemiologists, too.

19 **Q.** That was going to be my next question. What kind of
20 difference is there between the education of someone that
21 has an MD and someone who is an epidemiologist? Like,
22 what kind of topics do you have knowledge of that an MD
23 wouldn't, for example?

09:38:52

24 **A.** Are we speaking of an MD?

25 **Q.** An MD who doesn't also go on like you just described.

1 **A.** Obviously, MDs have a good feel for clinical medicine
2 and for the clinical presentation as the signs and
3 symptoms that may be associated with various exposures.

4 Most medical schools provide one class in
09:39:11 5 epidemiology. There are some people that I have met in my
6 career at CDC who are solely an MD who I would say were
7 absolutely first-rate epidemiologists, but they made that
8 their -- they made that their field.

9 Most physicians who graduate from medical school and
09:39:27 10 go into practice would not at any time consider themselves
11 epidemiologists.

12 **Q.** And can you explain for the Court what the concept of
13 a confidence interval means in your field?

14 **A.** Yes. It's not that intuitive. It's not something
09:39:42 15 that people can understand very easily. But when you are
16 doing studies, you have to determine from a statistical
17 standpoint what the chance is that this is true -- the
18 effect you are seeing is true. That with all the data
19 that you have, this is what the finding should be.

09:40:03 20 We do that with the statistical test. And it's called
21 a P value and it's -- the standard that we use is a P of
22 .05. So when you see 95 percent confidence interval,
23 that's just the measure of this .05, a statistical test.

24 The easiest way to think of that -- and it's not
09:40:24 25 great, but it's the easiest way we have of explaining

1 it -- is that if we did this exact same study 100 times
2 and this effect were true -- with me so far?

3 **Q.** Uh-huh.

09:40:41

4 **A.** -- 95 times out of 100 the results would be in the
5 same ballpark as we are finding now. That's the best way
6 to explain it.

7 **Q.** Got you. Thank you for that.

8 THE COURT: How is the 95 figure chosen? Why not
9 90? Why not 98?

09:40:54

10 THE WITNESS: That's a great question. As a
11 matter of fact, Your Honor, 90 has been used. I'll tell
12 you when it's used. It's when you are doing studies where
13 you want to generate hypotheses rather than confirm them.
14 So you are giving yourself more latitude to see whether or
15 not you have a finding.

09:41:11

16 But when you go to publish that study in the journal,
17 you have got to have really good reasons to have chosen
18 90.

19 THE COURT: Okay.

09:41:18

20 THE WITNESS: But that is one of the reasons.

21 **Q.** (By Mr. Medlock) And I would like to talk now about
22 kind of your work in epidemiology as applied to heat,
23 Doctor. Can you tell the Court what the number one cause
24 of weather-related deaths is in the United States?

09:41:34

25 **A.** Well, it is heat. It's almost never recognized by

1 anybody because of the fact that we don't see
2 infrastructure destroyed when a heat wave comes through.
3 But, you know, over 400 people a year die in the United
4 States from heat. So it is -- it is a huge weather
09:41:54 5 mortality problem in the U.S., and it is a bigger weather
6 mortality problem in the developing world.

7 **Q.** Why is it a bigger problem in the developing world?

8 **A.** Because they don't have the main -- the main
9 intervention that we have in the developed world for
09:42:10 10 avoiding heat-related death is access to air-conditioning.

11 And in the developing world, they don't have as much
12 access to air-conditioning as we do in the developed
13 world.

14 THE COURT: I think what -- I think this is
09:42:22 15 implicit in what you have said, but I gather heat-related
16 deaths are greater each year than cold-weather-related
17 deaths?

18 THE WITNESS: Well, that's an interesting
19 question that's debatable at this point. Cold-related
09:42:38 20 deaths have less to do with cold waves than it does to
21 with the time of the year that the deaths occur. And so
22 it's still trying to be teased out, Your Honor, as to what
23 role influenza plays in -- because, as you may know,
24 November, December, January are the highest death --

09:42:59 25 THE COURT: Right.

1 THE WITNESS: We don't know the reason for why
2 those three months are the highest death rates in the U.S.
3 I mean, I'm just being honest. We really don't know.
4 It's always been blamed on influenza. A lot of people are
5 saying that doesn't seem to be true.

09:43:13

6 We know cardiovascular deaths increase dramatically in
7 the cold-weather months. That has some role to play.
8 It's hard to tease that out.

9 THE COURT: I see.

09:43:24

10 **Q.** (By Mr. Medlock) Now, when you say heat deaths, are
11 we just talking deaths from hyperthermia; or are we
12 talking other heat-related causes?

13 **A.** It depends on what you are talking about. When we are
14 talking about 400 deaths, we're talking about
15 hyperthermia. We're not talking about across the country
16 increased mortality that we are seeing during a period of
17 warmer weather. We're not talking about that.

09:43:40

18 There are a number of studies that have looked at
19 that, too; but that's different than this.

09:43:56

20 **Q.** Now, one of the things in your article at Tab No. 3,
21 the climate change and extreme heat events article, you
22 mention that you consider heat waves to be a silent
23 killer. Could you explain that to the Court?

24 **A.** Well, it's what I talked about earlier. You know,
25 until the Chicago study, the Semenza Chicago study that we

09:44:16

1 did in 1995, heat waves didn't get any attention at all as
2 far as from a public health perspective. Almost none.
3 That was a watershed event.

4 Of course, the 2003 European heat wave where 45,000
5 people died was another watershed event where it began to
6 get attention. Up until that time, a heat wave would come
7 in. There would be radio announcements sometimes that a
8 heat wave was coming, and it would be really hot for a
9 number of days. A lot of people would die, and it would
10 not be noticed.

11 It wasn't the same as a Mississippi or Missouri River
12 flood where the infrastructure is destroyed or tornadoes
13 or hurricanes. But it is more devastating from a
14 mortality standpoint than those.

15 **Q.** And those 400 deaths a year that take place in the
16 United States, what locations do those occur in?

17 **A.** All geographical areas of the United States. The
18 National Center for Health Statistics in 2014 did a really
19 nice -- did a work on vital statistics death data in the
20 United States and found that the largest number of deaths
21 of people in the United States is in the south.
22 43 percent of all deaths from heat are in the south.
23 Followed by the west with 33 percent of the deaths. Those
24 two areas also had the highest death rate in the United
25 States.

1 And that sort of caused a little bit of consternation
2 among some people because it was always felt that the
3 populations in those two areas were acclimatized and
4 didn't suffer the impacts of heat as much as people in the
5 northeast and midwest do. But, in fact, they die at a
6 higher rate from heat; and their death certificates
7 reflect heat more often than any others in the U.S.

09:46:10

8 **Q.** And in addition to those geographic areas, the people
9 who died, did they die indoors or outdoors? What are the
10 physical locations of the people when they suffer?

09:46:31

11 **A.** Well, most people who die from heat in the United
12 States die indoors. There are always -- and it always
13 gets a lot of attention in USA Today and others. There
14 are always some healthy young people who are exercising.
15 Obviously, we have young people who are on football teams
16 and things like that. That's a tragedy every time. But
17 we don't have a lot in overall numbers of those. We also
18 have a lot of infants that die from heat a lot because any
19 infant that dies from heat is a tragedy. But primarily it
20 is older, poorer people in urban areas who are in enclosed
21 buildings. Normally they are socially isolated.

09:46:50

09:47:09

22 **THE COURT:** What part of the body fails to cause
23 these deaths?

24 **THE WITNESS:** It depends. Cardiovascular and
25 respiratory are two of the main. If you take the

09:47:25

1 cavalcade of symptoms from first noticing a little
2 dizziness to the time you die, a number of different
3 systems, primarily your sweating, your integument, your
4 skin.

09:47:41

5 Very early on, Your Honor, your cognitive system gets
6 involved. Your central nervous system becomes involved.
7 That's why it's difficult to rely solely on the people who
8 are in the environment to take care of themselves because
9 early on they no longer know exactly what is happening to

09:47:58

10 them.

11 **Q.** (By Mr. Medlock) That's why my wife tells me, when I
12 have been working out in the yard that I should come in
13 and drink some water because I'm not looking so good? Is
14 that what you -- but I think I can keep working?

09:48:11

15 **A.** What your wife says about how good you look is not --

16 **Q.** Fair enough. The next -- or the better question I
17 should have asked after that is would it concern you as an
18 epidemiologist if you are hearing that people in an
19 environment are experiencing symptoms like you just

09:48:30

20 described to the judge, like sweating, headaches, those
21 type of symptoms?

22 **A.** Any time we have a population of people experiencing
23 those symptoms, every public health person I know would be
24 alarmed.

09:48:42

25 **Q.** Why is that?

1 **A.** Well, because it leads to severe and serious
2 consequences. It's -- heat is a known hazard. There is
3 not going to be a whole lot more learned about the impacts
4 of heat on a human body. We know it. Okay. We know the
5 populations it impacts. We know that.

09:49:01

6 What we are looking at now is refining how -- our
7 plans and refining how we respond to that. In general, we
8 know what happens to a human body when it's subjected to
9 prolonged temperatures above certain degrees.

09:49:18

10 So if you are saying these people are exposed to these
11 temperatures and they are experiencing symptoms in the
12 normal flow of symptoms that lead to heat exhaustion and
13 heatstroke and death or impacting on other systems that
14 may already be compromised, like their cardiovascular or
15 respiratory system, of course that's alarming. Of course
16 that's something that needs to be paid attention to.

09:49:39

17 **Q.** What is the number one intervention to protect people
18 from heat?

19 **A.** Repeatedly the number one intervention to protect
20 people is getting them in an air-conditioned environment.
21 You need to understand something about heat and
22 air-conditioning. In my career at CDC, heat and
23 air-conditioning -- air-conditioning is the most effective
24 intervention I have ever seen for environmental exposure.

09:49:51

25 **Q.** That's any environmental exposure?

09:50:10

1 **A.** Any environmental exposure. Because if you put people
2 in air-conditioning, the hazard no longer exists. Okay.
3 It's like having elevated lead in the dust and water and
4 suddenly not having it anymore.

09:50:28

5 We have never been able to do that in the environment.
6 Okay? But in this situation, if we have the capacity to
7 air-condition the environment, heat is no longer a hazard
8 to the population. It's really fairly simple.

09:50:49

9 **Q.** But that's not something that the Department of
10 Criminal Justice does in Texas, right?

11 **A.** It -- for this Pack Unit, my understanding is that the
12 dorms are still not air-conditioned.

09:51:04

13 **Q.** I want to talk about some of the interventions that
14 the Texas Department of Criminal Justice does use. Is
15 there any epidemiological evidence that suggests using
16 fans is an effective intervention to prevent heat-related
17 illness?

18 MR. MOCZYGEMBA: Objection. Lack of foundation.

09:51:21

19 THE COURT: I think we have established the
20 doctor's education, his training and his professional
21 practice over the last few decades, and I can make a
22 judgment as to whether he has the foundation to answer
23 this question. I'm going to allow it.

09:51:34

24 MR. MOCZYGEMBA: Your Honor, if I may just
25 clarify my objection. I don't believe Dr. McGeehin has

1 reviewed all of TDCJ's policies, the current policies that
2 are in effect.

3 THE COURT: He has not been asked that question.
4 He has just been asked is there any epidemiological
09:51:54 5 evidence --

6 MR. MOCZYGEMBA: You are right. I withdraw the
7 objection, Your Honor.

8 **A.** There is conflicting epidemiologic evidence on the
9 effectiveness of fans. The best review of that was the
09:52:06 10 Cochrane Group reviewed it -- I'm guessing on the dates --
11 2012 maybe, C-o-c-h-r-a-n-e, reviewed it, as they
12 frequently are being asked to review questions of health
13 significance, and found that there was neither strong
14 evidence supporting the fact that fans reduce the risk of
09:52:29 15 heat-related illness nor denying the fact that fans reduce
16 the risk.

17 **Q.** (By Mr. Medlock) Now, did you ever -- what -- did the
18 CDC, when you were there, have any recommendations about
19 use of fans to abate heat illness?

09:52:47 20 **A.** Right. The CDC's recommendation hasn't changed and
21 won't change because of the Cochrane review. It's still
22 above 95 degrees heat index, we did not recommend the use
23 of fans. Particularly for mayors' offices handing out
24 fans to the populace for an intervention that was
09:53:10 25 effective in reducing illness and death from heat.

1 Q. If you'll go to Tab 3 in your binder, Doctor.

2 A. Yes.

3 Q. And page 432 on the American Journal of Preventive
4 Medicine article.

09:53:24

5 A. Okay.

6 Q. The subsection that says "Public Health Response and
7 Adaption Measures." The last paragraph under that
8 section.

9 A. Uh-huh.

09:53:35

10 Q. Could you read that paragraph for the Court?

11 A. Starting with "the use of fans"?

12 Q. Yes.

13 THE COURT: Go slowly.

14 THE WITNESS: Yes, sir. I will.

09:53:44

15 A. The use of fans indoors in rooms without
16 air-conditioning should be strongly discouraged during an
17 EHE, which is an extreme heat event. Reference 38.
18 Although fans provide a cooling effect by evaporating
19 sweat, fan use can pose a significant risk when the heat
20 index exceeds 37 degrees Celsius (99 degrees Fahrenheit)
21 because it serves to increase heat stress by blowing air
22 that is warmer than body temperature over the skin
23 surface. Reference 44.

09:54:08

24 Q. (By Mr. Medlock) And I understand that there is a
25 recent article from the Journal of the American Medical

09:54:30

1 Association that TDCJ's expert, Dr. Kathryn Means,
2 referred to in her report. Are you familiar with that
3 article?

4 **A.** I am.

09:54:42

5 **Q.** From your perspective, are there any concerns you
6 would have from applying the conclusions of that article
7 to the Pack Unit?

09:54:58

8 **A.** Well, my -- yes. To the Pack Unit, yes. To any
9 public health intervention, yes. It is a study done of a
10 very small number of college-age individuals in good
11 health for a relatively brief period of time with
12 increasing temperature and humidity in front of a fan and
13 a measurement of a couple of different measures and
14 whether or not they statistically, significantly
15 increased.

09:55:20

16 As I said in my deposition and I will say to -- till
17 forever, that has no public health relevance. We are not
18 designing interventions for healthy, college-age people to
19 sit in front of a fan for an hour and a half and see
20 whether their perspiration rate and core body temperature
21 increases. There is a huge difference between a healthy
22 person's perspiration rate and the people we are talking
23 about.

09:55:41

24 One of the reasons that we talk about the increased
25 risk of these -- of these groups of people, from the

09:55:55

1 elderly to the diabetics, to the obese, to cardiovascular
2 compromised, to respiratory compromised people is that
3 they don't cool their body very effectively.

4 Now, there is the other factor of fan use that you
09:56:14 5 need to be careful with. And that is a physics issue.
6 And that is when you blow air, molecules of air over a
7 surface, a non-perspiring surface in this case, that is at
8 a lower temperature, those molecules will heat up; and
9 that surface will become warmer, the living surface or
09:56:43 10 meat.

11 That's the theory behind a convection oven. A
12 convection oven can heat meat faster at 350 degrees than a
13 regular oven. And the reason is because it is blowing
14 warm molecules over the meat, causing the meat molecules
09:56:59 15 to move more rapidly and to increase in temperature.

16 We will never, ever do a study that will look at that
17 for people who are in the positions that I have been
18 describing. Thank God we will never do that study.

19 But with the precautionary principle guiding us, the
09:57:16 20 precautionary principle says when you have scientific
21 evidence on both sides, you take the most conservative
22 approach to protect the people.

23 With that in mind, it does not seem like good public
24 health practice to hand out fans and say, This is our
09:57:34 25 intervention --

1 Q. And --

2 A. -- at certain temperatures.

3 Q. -- do you know if CDC changed its recommendations
4 about giving away fans after this Journal of the American
5 Medical Association study?

09:57:45

6 A. No, not to my knowledge.

7 Q. Okay. Similarly, one of the other things that the
8 Department of Criminal Justice in Texas allows inmates to
9 do in their prisons, including the Pack Unit, is wear
10 shorts in their housing areas during the summer.

09:58:00

11 Is there any epidemiological evidence that shows
12 wearing shorts provides any protective measure from the
13 heat?

14 A. Well, I mean, when you ask a question and you say "any
15 protective measure from heat," certainly. I mean, the
16 less clothing you are wearing up to a certain temperature,
17 the more comfortable you are going to be. The more
18 surface area of skin you expose to moving air, the better
19 you are able to perspire. And a healthy person in a warm,
20 humid day, who is wearing shorts and a short-sleeved shirt
21 is going to be more comfortable and is going to be able to
22 get rid of heat more than a person in a suit like this.

09:58:12

09:58:30

23 Q. Is there any peer-reviewed evidence that suggests what
24 the efficacy of wearing shorts would be?

09:58:48

25 A. No. I don't believe that's ever been looked at.

1 Q. What about peer-reviewed evidence showing drinking
2 large amounts of water having a protective impact from the
3 heat?

09:59:12

4 A. Well, I mean, there are studies that show primarily
5 recruits -- there were some studies of recruits in the
6 armed services in the United States and Israel that looked
7 at various ways to avoid extreme heat duress.

09:59:34

8 We know for a fact that drinking water cools the body.
9 So it is good practice to recommend people who are in hot
10 environments to drink a great deal of water.

11 We know that electrolyte imbalance can lead to heart
12 attack and can lead to some of the things that I was
13 talking about with the judge a little earlier.

09:59:48

14 MR. MOCZYGEMBA: I apologize, Doctor. What study
15 are we talking about? I don't see it in the materials
16 that have been provided.

17 THE WITNESS: I'm not sure what the question is.

18 MR. MOCZYGEMBA: What study are we talking about?
19 I don't see it in the binder.

09:59:59

20 THE COURT: You said there are studies that show
21 studies of recruits in the armed services in Israel that
22 looks at various ways to avoid extreme heat and duress. I
23 think he's asking for those studies of recruits in the
24 armed forces.

10:00:13

25 MR. MEDLOCK: Your Honor, I would respond I don't

1 think we don't need to produce every study that
2 Dr. McGeehin has reviewed in the binder to talk about it.

3 THE COURT: No, you don't.

10:00:24

4 MR. MOCZYGEMBA: Your Honor, Rule 26 requires
5 disclosure of the basis of an expert's opinion.

6 MR. MEDLOCK: I believe we have disclosed all
7 those studies.

10:00:34

8 THE COURT: Can you identify any such studies or
9 is it just a body of studies that point in consistent
10 directions?

10:00:46

11 THE WITNESS: There has been a body of studies,
12 Your Honor, looking at recruits and their adaptation to
13 heat during training. I don't know those studies off the
14 top of my head. There is a number. They looked at
15 obesity. There is a number of studies like that.

16 THE COURT: I'm going to allow it.

17 MR. MOCZYGEMBA: Your Honor, if I could just get
18 a running objection to --

19 THE COURT: You may. You may have one, yes.

10:00:53

20 MR. MOCZYGEMBA: -- unnamed studies with unknown
21 titles.

22 THE COURT: Thank you very much. Yes, you will.

23 MR. MOCZYGEMBA: Thank you, Your Honor.

10:01:03

24 Q. (By Mr. Medlock) Now, the interventions that we have
25 just talked about, Doctor, the fans, shorts, drinking

1 large amounts of water, would there ever be a
2 peer-reviewed study looking at those as an effective
3 public health intervention for people with chronic medical
4 conditions that are affected by heat?

10:01:24

5 **A.** I mean, they are -- they are intervention factors that
6 are asked about sometimes in studies. It's difficult to
7 get a handle on the utility of those in lowering a
8 person's risk, but there are times when you have to look
9 and say that we know that these things cool the body. So
10 we know that they should be recommended from a public
11 health standpoint, and they are recommended from a public
12 health standpoint.

10:01:47

13 **Q.** You mentioned a minute ago when we were discussing
14 fans that that is never a study that would be done. Do
15 you recall that?

10:02:04

16 **A.** Yes.

17 **Q.** Why would that study never be done?

18 **A.** We would never take the people at the highest risk of
19 dying or becoming ill from heat and subject them to a
20 study that could look at whether or not a fan was an
21 effective intervention in reducing that risk because it
22 would put people at risk.

10:02:14

23 In order to do a study like that, you would have to
24 say that half of them or so would be subjected to these
25 temperatures and have a fan on them and half of them would

10:02:31

1 be subjected to these temperatures and not have a fan on
2 them. And no one is ever going to do that. Thank God.

3 **Q.** It would be dangerous for the human subjects, right?

4 **A.** And I hope for the researcher, yes.

10:02:47

5 **Q.** Now, you mentioned that the -- a moment ago we talked
6 about that the number one kind of risk factor for
7 heat-related illness is the absence of air-conditioning.
8 Are there other risk factors such as chronic illnesses
9 that people may suffer from?

10:03:04

10 **A.** Right. I think we have talked about that quite a bit.
11 And I have mentioned a number of times. There is a number
12 of different physical factors that impact a person's risk
13 of becoming ill or dying or suffering in a heat wave and
14 it's -- I can list them if you want. But the answer is
15 yes.

10:03:26

16 **Q.** Okay. We'll get into that list in just a moment. I'm
17 sorry. I missed one intervention measure. Is there any
18 peer-reviewed literature suggesting that showers are an
19 effective intervention to protect people from heat?

10:03:40

20 **A.** Well, yeah. I mean, it's a difficult question for me
21 to answer because of the term "effective" in there.
22 Showers for the short term will reduce a person's
23 temperature and are good at that. But giving a person a
24 shower and then putting them back into a very hot, humid
25 environment has limited effect.

10:04:03

1 Q. Why is that?

2 A. Because they are back in a hot, humid environment and
3 very soon the cooling of the water on the body will
4 dissipate and they are back in that position. However, it
5 is an intervention. It does for a temporary time
6 period -- I don't know what that time period is. Nobody
7 does -- cool the body.

8 Q. Now, would you also say, Doctor, that heat can be
9 dangerous for all people regardless of whether they have
10 any significant underlying medical conditions?

11 A. Yes. Increasing heat is increasing risk for all of
12 the population. It is a much greater risk as we get older
13 and if we suffer from some of these comorbidities.

14 Q. When we talk about the increasing risk and the danger,
15 are we just talking about the danger of death or are we
16 talking other less dire health consequences?

17 A. Well, I mean, when you are talking about risk, it
18 depends on what the risk ratio is based on. But you are
19 talking about the risk ratio for that health outcome. It
20 may be for an emergency department visit. It may be for
21 hospitalization. It may be for a hospitalization of a
22 certain type, an admitting or discharge diagnosis of a
23 certain type or, of course, it could be mortality.

24 Q. In your view of the evidence and your knowledge of
25 what the TDCJ does to abate the risk of heat, do you

1 believe those measures acceptably reduce the risk to
2 people at the Pack Unit?

3 MR. MOCZYGEMBA: Objection, improper foundation.

4 THE COURT: I'm going to allow it.

10:05:47

5 MR. MOCZYGEMBA: Your Honor, if I may clarify.

6 Dr. McGeehin, in his expert report and at his deposition,
7 had not considered TDCJ's current heat mitigation policy.
8 He reviewed the prior policy. That has not been disclosed
9 in his report or supplemented despite having received that

10:06:04

10 information over a year ago, four months prior to his
11 original report being published, I believe nine months
12 prior to his amended report being done and over a year
13 from the hearing today.

10:06:20

14 So this is going to be an opinion on TDCJ's prior
15 policy; and, therefore, it's irrelevant under Rule 401 and
16 Rule 702.

17 THE COURT: Your response.

10:06:31

18 MR. MEDLOCK: Your Honor, first of all, they
19 changed the policy midcourse in this litigation after
20 Dr. McGeehin had written his report.

10:06:44

21 Second, I don't think that the changes that they have
22 made are substantial enough. I have a copy of the policy
23 here that I would be happy to show him today and he can
24 look at it and determine if there is any significant
25 changes that he thinks have added, you know, a significant

1 protective measure or not that makes the new policy any
2 better than the old policy.

3 MR. MOCZYGEMBA: Your Honor, if I may briefly. I
4 think opposing counsel said that the new policy was
10:06:57 5 changed after Dr. McGeehin's report was done. That is not
6 correct. The new policy went into effect in March 2015.
7 It was disclosed several weeks later in April 2015 to the
8 plaintiffs, which is approximately four to five months
9 before Dr. McGeehin's 2015 report.

10:07:14 10 THE COURT: Well, I can accept his opinion as
11 based on a prior policy. That's all right.

12 MR. MOCZYGEMBA: You are sustaining the
13 objection, Your Honor?

14 THE COURT: No. I'm denying the objection, but I
10:07:22 15 will place his opinions in his report in that context.

16 MR. MOCZYGEMBA: May I get a ruling, Your Honor?

17 THE COURT: I'm sorry?

18 MR. MOCZYGEMBA: May I get a ruling on this for
19 the record, please?

10:07:32 20 THE COURT: Yes. Your objection is denied.

21 MR. MOCZYGEMBA: Thank you.

22 Q. (By Mr. Medlock) Dr. McGeehin, the policy that you
23 had reviewed prior to your deposition, does that provide
24 adequately -- does that provide mitigation measures that
10:07:49 25 acceptably reduce the risk of heat at the Pack Unit?

1 A. Do you have that policy somewhere?

2 Q. The prior policy?

3 A. Yeah. Whatever policy we are talking about. I mean,
4 my problem with the policy was it wasn't a comprehensive
10:08:03 5 policy in dealing with reducing the risk of heat. For --
6 it had no reference in it to access to air-conditioning,
7 which is the primary intervention for reducing the risk.

8 It primarily -- if I am remembering the policy that
9 we're talking about -- relied on drinking copious amounts
10:08:26 10 of water with ice. And I believe that the term "if
11 available" was part of the ice, if the ice was available.
12 That it responded -- it relied very heavily on fans for
13 the dorm and individual fans. That it relied on the
14 ability of the inmates to wear shorts, comfortable
10:08:56 15 clothing, in the hot weather. And that -- that was the
16 primarily -- that was primarily the interventions that
17 were proposed to deal with heat.

18 There was not a policy, that I remember -- and maybe
19 this is true of the new policy -- that was specific about
10:09:16 20 extreme heat events, which is beyond the normal,
21 summertime, Houston weather. But then what happens when
22 we have something that's beyond the normal, and what would
23 the Pack Unit do under those conditions.

24 So that is -- that's what I recall about the policy.

10:09:32 25 It was -- it was inadequate in a number of different

1 important areas.

2 **Q.** And if you could go to Tab 15 in your binder, Doctor.
3 I believe this is the current TDCJ heat policy.

4 **A.** This is the temperature for both cold and hot?

10:10:13

5 **Q.** Yes. It's Administrative Directive 10.64, extreme
6 temperature conditions in TDCJ. If you would take a look
7 at that, please, Doctor.

8 **A.** Yes. Okay.

10:10:46

9 **Q.** Do you see any problems with this current version of
10 the policy, Doctor?

11 **A.** Well, I mean, it's -- it has some improvements in it,
12 but it still has major areas of concern. It is -- this
13 policy, the one I read before and this one, is it's the
14 only policy I have ever seen -- and I have reviewed many,
15 many plans to deal with heat with communities, obviously,
16 not with prisons before -- that never mentions the words
17 "air-condition." The only time air-condition is mentioned
18 in this policy is to provide an air-conditioned van to
19 transport psychiatric patients, I believe.

10:11:26

20 And it's almost like it's intentional that we're not
21 going to mention air-conditioning. It does mention cool
22 environment, if I'm not mistaken, somewhere in here; but
23 when the number one intervention in the United States
24 to -- in avoiding deaths and illness and injury from heat
25 is access to air-conditioning, it's striking that this --

10:11:47

1 and somebody may object and say that I missed somewhere
2 where air-conditioning is mentioned in here. I apologize
3 if I did. But I have never seen it, and I didn't see it
4 with the earlier one either.

10:12:04

5 Another one -- problem that I have with it is the same
6 Heat and Humidity Matrix at the very end of this document
7 that was in the earlier one which --

8 **Q.** We'll talk about the Heat and Humidity Matrix in a
9 minute.

10:12:18

10 Aside from the issues with the Heat and Humidity
11 Matrix, any other concerns with this policy?

12 **A.** Well, it appears that more emphasis has been put on
13 training people to identify, which is a good thing. It
14 still relies primarily on fans and ice water.

10:12:43

15 **Q.** Now, one of the things that we heard testimony about
16 yesterday from TDCJ's -- one of their deputy directors is
17 that they are now doing a practice they call respite areas
18 at the Pack Unit. Are you familiar with that practice?

10:13:07

19 **A.** I think that -- I think the respite areas or the
20 respite policy may have been mentioned in my deposition
21 when I gave it. If I'm not mistaken, it's cool areas that
22 people can move through on days of high temperature; is
23 that correct?

24 **Q.** Yes.

10:13:23

25 Do you have any concerns about that as a practice at

1 the Pack Unit?

2 **A.** Well, you know, I have to -- I want to be careful with
3 what I say here because moving people into cool
4 environments is a strong recommendation for reducing
10:13:38 5 illness and death from heat. That is a good thing, as I
6 say. That's a good thing.

7 The more that you can take the human element out of
8 that, the better it is.

9 So if access to the respite areas is for a certain
10:13:59 10 number of hours a day for all of the inmates and there is
11 some sort of policy that says it has to happen, not that
12 it's at the discretion of the -- of the warden or the
13 discretion of whoever is over that dorm or anything like
14 that. That, in fact, this happens. The more you can take
10:14:27 15 the human element out of it, the better it is.

16 So if you were to say to me is it good that TDCJ is
17 going to offer or is going to have the inmates move
18 through an air-conditioned environment for a certain
19 number of days and get them out of the hot environment, my
10:14:48 20 answer to that is yes.

21 **Q.** Do you -- you mentioned taking the human element out
22 of it. You mentioned taking the warden and the
23 correctional officers out of the equation. Should it
24 be -- should you try to take the inmates' voluntary
10:15:04 25 choices out of the equation, as well?

1 **A.** Well, that's -- what I'm about to say is going to be
2 controversial, I'm sure. And I have never run a prison.
3 So I don't know the problems of running a prison. I
4 imagine they are extensive.

10:15:17 5 But since, in my opinion, the early symptoms of people
6 who are being affected by heat affect their cognitive
7 ability, you have to have a way to insist that everybody
8 go through this.

9 My other concern -- and I don't have empirical
10:15:37 10 evidence on this, but it is a concern based on 20 years of
11 doing this stuff -- is that some of the comorbidities that
12 put people at the highest risk of suffering from
13 heat-related illness, obesity, difficulty in breathing,
14 cardiovascular problems, may impact their mobility, may
10:16:01 15 impact their interest in getting up and going to a respite
16 area that's air-conditioned for a period of time.

17 And there, we would be leaving out the highest-risk
18 people from the effective intervention that's been
19 proposed. So I have a concern about that, too.

10:16:20 20 **Q.** Now, you just mentioned comorbidities --

21 THE COURT: This problem obviously pre-existed
22 air-conditioning?

23 THE WITNESS: Yes, it did.

24 THE COURT: Are you familiar with the means that
10:16:41 25 were used prior to air-conditioning to deal with EHEs?

1 THE WITNESS: Yes, Your Honor. They were
2 primarily the other things that we are talking about. It
3 was limiting your work during the hottest time of day,
4 seeking out the shade, wearing the coolest clothing you
5 can, drinking as much liquid as you can, those sorts of
6 things.

10:17:02

7 **Q.** (By Mr. Medlock) While we are discussing EHEs,
8 Doctor, I would like you to take a look at this.

9 **A.** Okay.

10:17:34

10 MR. MEDLOCK: We would like to go ahead and mark
11 this as Plaintiffs' Exhibit No. 12. I believe this is the
12 policy that was discussed yesterday with Mr. Ginsel about
13 inclement weather events.

14 THE COURT: Is there an objection?

10:17:59

15 MR. MOCZYGEMBA: Just one second, Your Honor. I
16 apologize. Your Honor, I am not sure if this is the
17 current policy. Subject to that objection -- or subject
18 to that potential objection, no other objection.

19 THE COURT: Well, it's admitted as at least the
20 policy as of November 4th, 2011.

10:18:31

21 You may inquire further.

22 **Q.** (By Mr. Medlock) Doctor, have you had a chance to --
23 I'll tell you it was represented to the Court yesterday
24 that this is TDCJ's policy to address heat waves or EHEs.

10:18:52

25 Have you had a chance to review this policy now?

1 **A.** Yes.

2 **Q.** Do you believe this is an adequate policy to address
3 heat waves?

4 **A.** This is a policy to establish guidelines for the
5 operation of outdoor contact visits in recreation for
6 extreme weather events. It's not a policy to deal with
7 heat waves.

8 **Q.** What would your concerns be with this policy as it
9 relates to heat waves or extreme weather -- or extreme
10 heat events?

11 **A.** Well, it's -- I mean, it's not a policy to deal with
12 those things. So, I mean, my concern would be it has
13 nothing to do with that. It has to do with can people go
14 outside when it's very warm or hailstorms or tornado
15 warnings or things like that. I mean, I can't even list
16 all my concerns with it.

17 It's not -- it's like saying what -- pointing at a
18 bicycle and saying what's your concern about that being a
19 pickup truck? They are not the same thing.

20 **Q.** What should an effective heat wave policy have in it?

21 **A.** One of the articles that I wrote with Susan Bernard
22 talks about that. Also, the article that George Luber and
23 I wrote goes through the essential components of a heat
24 wave plan for communities. I mean, it certainly could be
25 adapted for the Pack Unit or something like that.

1 But there are -- there are certain things that have to
2 be there for it to be a heat wave response plan. And one
3 of them, there has to be a written plan that has these
4 elements in it. There has to be a trigger for when the
5 plan is put in place. What is the temperature? What is
6 the communication with the National Weather Service that
7 puts this plan in place? There has to be --

8 THE COURT: Not too fast now.

9 THE WITNESS: I'm sorry.

10 (addressing reporter) Are you good? I'm sorry.

11 **A.** There has to be a communication policy. There has to
12 be an intervention that we're talking about that is put in
13 place. There has to be written notice to the people who
14 are -- written or -- we are dealing with communities. So
15 frequently it's media notice. Let people know that they
16 are in this condition. It would be different, obviously,
17 for a Pack Unit or for a prison.

18 But there are certain elements that have to be in
19 place. And it has to be written. It has to be written so
20 that if something happens two months from now, I go to it
21 and there is the plan. And I am the warden, and my job is
22 to do this. And I am to bring in the medical experts to
23 do these things. And then the communications people are
24 to do these things. And the training people are to do
25 these things. Okay?

1 And then, at the end of it all, part of it is an
2 evaluation. You say how well did this work? And then you
3 tweak it. And then you put it back. And then you bring
4 it back out again.

10:21:48

5 Those are the elements of any successful plan for any
6 weather event, but particularly for heat. And almost
7 every major city in the United States has that.

10:22:08

8 **Q.** If the City of Houston had called up the CDC and
9 asked, What do we need for an effective heat wave plan,
10 that's what you would tell them?

11 **A.** Yeah. And then, we would go out and visit with them;
12 and we would work with them.

13 **Q.** I'm going to show you what was marked as Defendants'
14 Exhibit No. 4 yesterday.

10:22:26

15 And, Doctor, I don't believe you have seen this before
16 because this is the 2016 version of the system-wide e-mail
17 that was discussed at your deposition. And I believe that
18 you had reviewed an earlier version in writing your
19 report.

10:22:43

20 **A.** Yes.

21 **Q.** At the very bottom of the first page and then running
22 on to the top of the second page there is a section called
23 "Wellness Checks and Respite Areas." Do you see that?

24 **A.** Yes.

10:23:00

25 **Q.** Take a look at that and let us know if you have any

1 problems with the way this policy operates, if this is, in
2 fact, a policy.

3 **A.** Okay. Specifically for those two -- three bullets,
4 specifically what would -- what are you interested in?

10:23:34

5 **Q.** Whether -- do you have any problems with the way those
6 three bullets are written?

7 **A.** No. I mean -- I mean, no, I don't have problems with
8 the way they are written. If, in fact, the -- if the
9 person doing the wellness check is familiar and cognizant

10:23:51

10 with the symptoms that they should be looking for, then
11 having people check on high-risk people is a good thing.
12 It's part of every community response plan that we at CDC
13 felt was effective.

14 If -- if -- and I just spent a bit of time talking
15 about this. If there is a way to uniformly get people
16 into air-conditioned areas at the time of extremely high
17 temperatures to give their body a chance to cool, to give
18 the resilient human body a chance to get back to normal
19 for some time, then that is -- that is a good thing.

10:24:11

20 So these -- I don't remember in the previous ones I
21 reviewed. I remember talking in my deposition about the
22 training and the fact that, I think, UTMB has worked on a
23 training program and my saying, yeah, that's -- that's
24 good. I don't remember except -- I don't remember reading
25 anything about a respite area before, but I remember we

10:24:30

10:24:47

1 talked a little bit about it. So this is the first time I
2 think I have read about the respite area.

3 **Q.** Now, the last bullet there says: During the extreme
4 temperature months, prisoners must be allowed access to
10:25:00 5 respite areas in the late afternoon or early evening hours
6 or, if necessary, more frequently.

7 Do you have any problem with that, the "if necessary"?

8 **A.** Well, the "if necessary" causes me concern every time
9 I see it because I have seen it in a lot of the directives
10:25:18 10 from this agency. If necessary, if available, if
11 plausible -- I don't think plausible has been used. And I
12 have problems with the allowed access.

13 **Q.** Why does that language --

14 **A.** Well, the same thing. I don't want to redo everything
10:25:36 15 I have said. But the same thing I said before. That I
16 have problems with some of the comorbidities may, in fact,
17 be a confounder with people seeking this. And I have
18 problems with early stages of this may affect their
19 cognitive ability to make rational decisions.

10:25:53 20 I mean, that's -- that's my problem. If someone were
21 able to address those problems and say that's not a huge
22 issue -- I don't know how they would do that -- then
23 getting people into air-conditioned environments is a good
24 thing.

10:26:08 25 **THE COURT:** You might look for a place we can

1 take a break.

2 MR. MEDLOCK: Actually, this would be an
3 excellent place.

4 THE COURT: A ten-minute break.

10:26:16

5 (Recess from 10:26 a.m. to 10:43 a.m.)

6 THE COURT: Where is the problem with the
7 misnumbering? Which one?

8 MR. JAMES: I think it's your binder that I
9 misnumbered, Your Honor. The numbers are totally wrong.

10:44:14

10 THE COURT: The direct exam?

11 MR. JAMES: Yes. We're going to take them up and
12 give them back to you. We can number them afterwards.

13 THE COURT: Okay. That's fine.

14 MR. SINGLEY: We'll sort it out for you, Judge.

10:44:28

15 THE COURT: You may resume your inquiry.

16 **DIRECT EXAMINATION (continued)**

17 BY MR. MEDLOCK:

18 Q. Now, Doctor, I want to move on to some of the
19 comorbidities that we have kind of tangentially discussed.

10:44:43

20 I have put an excerpt from Defense Exhibit No. 5 -- it's
21 Tab No. 8 in your binder, if you would like to look at the
22 whole thing -- up on the screen.

23 From an epidemiological perspective, do you believe
24 that people with these comorbid conditions are at an

10:45:06

25 increased risk from heat?

1 **A.** Yeah. I think the literature is very clear on that.

2 **Q.** Would you describe why from an epidemiological
3 perspective?

10:45:17

4 **A.** Well, because they have been found in multiple studies
5 to have increased relative risk or odds ratios of dying or
6 being hospitalized or coming to an emergency room for
7 various health outcomes in extreme heat events.

10:45:39

8 **Q.** And would the studies that you just mentioned have the
9 appropriate confidence interval and the statistical
10 significance that we discussed earlier this morning?

11 **A.** What I'm talking about is that they are statistically
12 significant. There are other studies that have looked at
13 this that may not have had the power for some of these
14 comorbidities, but these are well-accepted comorbidities.

10:45:54

15 **Q.** Okay. If there were 700 -- or more than 700 inmates
16 at the Pack Unit with hypertension, would you consider all
17 of them to be at an increased risk from an epidemiological
18 perspective?

19 **A.** Certainly.

10:46:06

20 **Q.** And if there were over 80 people with COPD at the Pack
21 Unit, would you consider all of them to be at an
22 epidemiologically significant increased risk?

23 **A.** Yes.

10:46:24

24 **Q.** If there were over 110 people with asthma, would you
25 consider them to be at a similar increased risk?

1 **A.** Yes.

2 **Q.** And if there were over 200 people with diabetes at the
3 Pack Unit, would you consider all of them to be at an
4 increased risk?

10:46:39

5 **A.** Yes.

6 THE COURT: So would you consider all patients,
7 all inmates at the Pack Unit with any one of these
8 conditions to be at risk?

9 THE WITNESS: Yes.

10:46:46

10 THE COURT: Okay.

11 **Q.** (By Mr. Medlock) The last one --

12 THE COURT: Would there be a heightened risk if
13 they had more than one?

14 THE WITNESS: Oh, yes. Particularly, Your Honor,
15 if they had these and also were over age 65.

10:46:56

16 **Q.** (By Mr. Medlock) I was going to ask you specifically
17 about psychiatric conditions, which is on this list. I
18 would assume you would agree they would be at an increased
19 risk by virtue of their psychiatric condition?

10:47:13

20 **A.** I don't know by virtue of. I'm not a psychiatrist or
21 a physician. They might be because they are not
22 cognitively competent or they might be because of the
23 medications that they might be on.

10:47:29

24 **Q.** And why would their cognitive abilities lead you to
25 believe that they are at an increased risk?

10:47:46

1 **A.** Well, to respond to a risk, you have to have knowledge
2 of that risk. You have to understand the risk. So any
3 time cognitive ability is impaired either -- if the person
4 can't understand the risk, someone has to take care of
5 them to make sure that the risk is kept at an acceptable
6 level.

10:48:02

7 **Q.** And would your impaired cognitive functioning decrease
8 kind of your ability to take care of yourself, to take
9 personal responsibility for your own medical condition?

10 **A.** Yes. Depending on the level of impairment, certainly.

11 **Q.** And would heat kind of increase that level of
12 impairment?

13 **A.** It might.

10:48:20

14 **Q.** And one of the conditions that is not on this list
15 that I believe the epidemiological data supports -- please
16 correct me if I'm wrong -- is obesity. Is obesity also a
17 condition that puts patients at an increased risk of
18 heat-related illness?

19 **A.** The literature shows that it is, yes.

10:48:36

20 **Q.** Okay. If there were 110 people with obesity at the
21 Pack Unit, do you believe they would all be at an
22 increased risk?

23 **A.** Yes.

10:48:53

24 **Q.** And you mentioned that a -- kind of another comorbid
25 condition that's here on the list would be age. I assume

1 that would also increase the risk?

2 THE COURT: I think he has answered that any one
3 of these would increase the risk.

4 MR. MEDLOCK: Okay. Fair enough.

10:49:03

5 THE COURT: And there would be a more pronounced
6 effect if there were more than one.

7 **A.** I do -- being 60 years of age, I do have problems with
8 age being called comorbid.

9 **Q.** (By Mr. Medlock) Fair enough. Fair enough.

10:49:17

10 If there were over 3,300 people over age 60 at the
11 Pack Unit, whether it's comorbid or not, would that cause
12 you a concern that they would be an increased risk?

13 **A.** That is certainly a concern when you are dealing with
14 heat.

10:49:31

15 MR. MOCZYGEMBA: Your Honor, if I could just
16 clarify. Mr. Medlock is asking about over 3,300 people.
17 I don't understand.

18 MR. MEDLOCK: I'm sorry. I meant to say 300
19 people. If I said 3,300, then that was my error.

10:49:53

20 THE COURT: All right. We understand.

21 **Q.** (By Mr. Medlock) Similar to the last slide, this
22 slide is a list of medications that increase risk for
23 patients.

10:50:06

24 Would you say from an epidemiological perspective that
25 this is correct, that all of these classes of medications

1 cause patients to have an increased risk of a heat-related
2 illness?

3 **A.** That's a difficult question for me to answer. All of
4 these medications -- I am very knowledgeable about heat
10:50:20 5 risk. I don't walk around with this stuff in my head. So
6 I will say that many of these medications have been shown
7 in multiple studies to increase the risk, but I could not
8 testify in court that each one of these has been shown to
9 increase risk.

10:50:38 10 I'm sure if they are on this list that in multiple
11 studies they have been shown to increase risk, but I don't
12 have those drugs memorized.

13 THE COURT: Where does this list come from?

14 MR. MEDLOCK: This is also from the Correctional
10:50:51 15 Managed Health Care policy that was admitted as
16 Defendants' Exhibit No. 4 yesterday.

17 **Q.** (By Mr. Medlock) But you can testify that from an
18 epidemiological perspective there are certain medications
19 that do increase the risk of patients' heat-related
10:51:04 20 illnesses?

21 **A.** I'm looking at the classes, and all these classes have
22 been. So if that was your question. But certainly not
23 each one of these medications. I'm not that familiar with
24 them.

10:51:10 25 **Q.** Whether or not that was my question, that's what I

1 intended to ask.

2 **A.** It think it was your question.

3 **Q.** Thank you, Doctor.

4 **A.** Yes, sir.

10:51:18

5 **Q.** And, likewise, Doctor, if there were over 400 people
6 who TDCJ's medical provider had identified as people who
7 should not be exposed to extreme temperatures or direct
8 sunlight or extreme humidity, would you consider those
9 people to be at an increased risk of a heat-related

10:51:42

10 illness at the Pack Unit?

11 **A.** Yes, based on why they designated them in that
12 category. But I would imagine that they would also
13 consider that. That's why they are putting them in that
14 category.

10:51:53

15 **MR. MEDLOCK:** David, if you would go to the next
16 slide, please.

17 **Q.** (By Mr. Medlock) Now, Doctor, this is just a summary
18 of the named plaintiffs in this lawsuit. From an
19 epidemiological perspective, would you believe that people
20 with these who are kind of described in this document,
21 maybe with the exception -- and I'll ask about Mr. Santee
22 separately. That Mr. Cole, Mr. Brannum and Mr. King and
23 Mr. Yates would be at an increased risk due to heat?

10:52:12

24 **MR. MOCZYGEMBA:** Objection. I don't believe
25 Dr. McGeehin has opined in his report about this chart or

10:52:29

1 supplemented his report for the named plaintiffs.

2 MR. MEDLOCK: It's a summary document, Your
3 Honor. The only purpose of it is to show their age and
4 their medical conditions. It's a summary of what he just
5 testified to.

10:52:44

6 MR. MOCZYGEMBA: He is asking him to give an
7 opinion on the named plaintiffs. I don't believe that's
8 in his report. If he could show me where it's in his
9 report that he is giving an opinion on the named
10 plaintiffs.

10:52:56

11 THE COURT: That may be beyond the report. I
12 think it's unnecessary. I'll sustain the objection.

13 MR. MEDLOCK: Okay. All right.

14 MR. MOCZYGEMBA: Your Honor, if I may, I would
15 ask for Mr. Medlock to take the chart down, as well.

10:53:12

16 THE COURT: He has.

17 MR. MEDLOCK: If you would move to the next
18 slide, please, David.

19 **Q.** (By Mr. Medlock) Dr. McGeehin, would you consider it
20 appropriate to apply population level studies like we've
21 talked about earlier today when determining the level of
22 risk to inmates at the Pack Unit?

10:53:33

23 **A.** Yes.

24 **Q.** Why is that?

25 **A.** Because they are human beings exposed to the same

10:53:46

1 hazard that we have been talking about all this time.

2 **Q.** If there were testimony from any of the defendants'
3 experts that you can't apply population studies to the
4 Pack Unit, how would you respond to that?

10:54:08

5 **A.** I wouldn't understand what the rationale behind that
6 was.

7 **Q.** Would that go against kind of basic epidemiological
8 principles and teachings?

9 **A.** It would go against the public health practice.

10:54:25

10 **Q.** Okay. Let's move on to kind of when the risk of heat
11 begins -- from heat begins. If you would take a look on
12 the screen, we have the National Weather Service heat
13 index chart. Have you reviewed this document?

14 **A.** Many, many, many times.

10:54:42

15 **Q.** Okay. Do you know anything about how this chart was
16 developed?

17 **A.** Yeah. It was developed based on National Weather
18 Service data, EPA data, CDC data in an attempt to give the
19 populace and the decision-makers around the country as
20 quick and, I think, relatively easy idea of the increasing
21 risk when we have temperatures and humidities increase.

10:55:05

22 **Q.** Was this -- did the National Weather Service consult
23 with the CDC when developing this chart?

24 **A.** Yes.

10:55:21

25 **Q.** And did it consult with people you were working with

1 or supervising at CDC on this chart?

2 **A.** Yes.

3 **Q.** Was this chart developed kind of with an eye towards
4 just those especially vulnerable people with comorbidities
10:55:36 5 that we've talked about, or does this chart kind of apply
6 to everyone?

7 **A.** No. This chart is trying to represent an increasing
8 risk for the population of the United States.

9 **Q.** So would it be fair to say that for the people with
10:55:47 10 comorbidities and the -- taking the medications that we
11 have just looked at, would they be at a higher risk than
12 this chart indicates?

13 **A.** The epidemiologic evidence indicates that they are at
14 a higher risk from heat.

10:56:01 15 **Q.** Would you kind of explain kind of the principles
16 behind this chart for the Court?

17 **A.** Well, it is -- as I just mentioned, it is a way to try
18 to represent the increasing risk that the populace has
19 from temperatures as the temperature and humidity
10:56:19 20 increase.

21 And there are different shadings in there. The
22 shadings obviously go from yellow to red. And that was
23 done with some great deal of conversation about how do we
24 represent the fact that these aren't lines of demarcation;
10:56:35 25 that, in fact, there is no real line between 90 and 91

1 heat -- degree heat index or 105 and 106; that, in fact,
2 this is an attempt to have a representation that is being
3 able to be utilized by policymakers and decision-makers
4 while still representing what the -- what the epi and
5 meteorological evidence portrays.

10:56:59

6 **Q.** And the kind of goal behind this chart is to
7 illustrate that at a heat index of 80 you should use
8 caution that progresses up to extreme caution at 91 and
9 danger at 105 and extreme danger at 130; is that --

10:57:21

10 **A.** Extreme danger, if I'm not mistaken, at 125.

11 **Q.** You are correct. Yep.

12 And how would CDC and the National Weather Service
13 suggest that the populace respond based on these charts of
14 these increasing temperatures and humidity levels?

10:57:39

15 **A.** Well, this isn't really for the populace as much as it
16 is for decision-makers. When I have described this three
17 times, I have said for policy and decision-makers.

18 This is try to make sure that people who are
19 responsible for public health action in any sort of an
20 environment have an easy to use, easy to follow graph that
21 tells them where they are as far as risk and danger goes.

10:57:56

22 So, I mean, it can be used by the populace, but it's --
23 and it's available to the populace, but it was designed
24 more for what do we do when we start seeing this? What

10:58:20

25 does this really mean? So it's used by the populace, but

1 it's really for decision-makers.

2 **Q.** The recommendation would then be at these different
3 caution, extreme caution, et cetera, levels that different
4 effects would -- different policies or procedures would
5 kick in at those levels? Is that kind of the idea?

10:58:34

6 **A.** For the general population of the U.S., yes.

7 **MR. MEDLOCK:** David, if you could move to the
8 next slide, please.

9 **Q.** (By Mr. Medlock) Now, Doctor, this is taken from -- I
10 apologize. I don't have the exhibit number. But it's
11 from TDCJ's heat -- extreme temperature policy.

10:58:50

12 **MR. SINGLEY:** Defendants' Exhibit No. 3.

13 **Q.** (By Mr. Medlock) It's Defendants' Exhibit No. 3. And
14 it's Tab 15 in your binder, Doctor, if that helps you out.

10:59:17

15 **A.** All right.

16 **Q.** Does this appear to be pretty close to the same chart?

17 **A.** In what way?

18 **Q.** Well, how would you say this chart differs, I guess?

19 **A.** Well, this chart is -- a great deal of work went into
20 that last chart to try to, as I said, represent risk. One
21 of the things that you cannot do is say at a certain
22 temperature or even at a line drawn here that heat
23 exhaustion occurs or heatstroke occurs. There is no way
24 that you can take the scientific literature and draw those
25 lines of demarcation.

10:59:38

10:59:59

1 What we see -- and because the population is so
2 variable. What we see is an increase in risk. So we have
3 an increase in risk in the National Weather Service chart
4 that was up before; and then we have what happens to
5 people in a hot environment, which goes with this
6 cavalcade of symptoms that we've talked about.

11:00:13

7 You cannot say a temperature and this occurs. You
8 just can't. There is not the data that allows you to do
9 that.

11:00:27

10 Now, having that in here -- I mean, I am not sure why
11 they didn't just go with the National Weather Service
12 chart. And maybe this is simpler in some ways. It's not
13 to me. But then if you go through and say heat exhaustion
14 and heatstroke possible.

11:00:43

15 For example, heatstroke possible. The heatstroke
16 possible category goes up to 125 degrees of heat index.
17 125 degrees. Okay. That's what they are seeing in India
18 over the last couple of days. 127 degrees was the hottest
19 New Delhi has ever been.

11:01:07

20 So 125 degrees, the intervention listed here -- and I
21 did notice that this was in the latest packet that I just
22 reviewed. The intervention up to 125 degrees is "Staff
23 shall promote high water intake, provide five-minute rest
24 breaks every one-half hour, lying down with feet up and
25 reduce work by one-third." Up to 125 degrees that's the

11:01:29

1 intervention that they are putting for their working
2 people.

3 **Q.** Do you consider that even minimally adequate?

4 **A.** No.

11:01:44

5 **Q.** Would you consider that at 125 degrees for the risk to
6 be way greater than suggesting lying down and putting your
7 feet up?

8 **A.** Yes.

11:02:09

9 MR. MEDLOCK: David, if you could go to the next
10 slide, please.

11 **Q.** (By Mr. Medlock) Do you recognize this slide, Doctor?

12 **A.** I do. This is from the impact and trigger points in
13 the Maricopa County study.

11:02:21

14 **Q.** And that was the Petitti study that we admitted
15 earlier this morning?

16 **A.** It is.

17 **Q.** Okay. Would you explain for the Court kind of what
18 this graph -- what these graphs show?

11:02:31

19 **A.** Yes. I mean -- and it was fascinating to me. I
20 probably don't want to go into that.

21 But, basically, what this shows is the health events
22 from direct exposure, mortality, hospitalization and ED
23 visits. So this is --

24 **Q.** ED being emergency department?

11:02:45

25 **A.** Emergency department.

1 This is the gradations that we might see of the
2 utilization of medical care in a community based on heat
3 exhaustion, heat cramping, heatstroke and unconsciousness.
4 Okay. So that is the gradations.

11:03:03 5 It's ED visits. They are so bad, we are going to put
6 them in the hospital. And then, of course, either
7 hospitalized or not or ED visits or not, those who died.

8 So what they did was what we have been asking
9 communities to do for some time, and that is to try to
11:03:20 10 find the associated heat indices where we see health
11 effects occur.

12 And the idea behind that is to get a -- I mean, the
13 National Weather Service chart is fine as it is. But for
14 each community to implement interventions that are
11:03:39 15 effective for their community in their geographical areas
16 and for their subpopulations that are at an increased
17 risk, you need this sort of work.

18 What struck me about this -- and I had no idea that we
19 would see this -- is that so many of these temperatures
11:03:52 20 coincide with what we just had on the National Weather
21 Service chart. So when you look at the low temperatures
22 where we see -- I'm looking over there. The low
23 temperatures where we see -- now, this would be the
24 minimum temperature that happens in a day is 27 degrees.

11:04:12 25 And it's the bottom right-hand chart for ED visits. So

1 this would be the low temperature where we start to see a
2 statistically significant increase in emergency department
3 visits. Okay?

11:04:30

4 That's right around at 80 degrees. So that's the
5 bottom right chart that you are seeing. 27 degrees
6 Celsius, really quickly in my head, is somewhere close to
7 80. I don't know what it is exactly.

11:04:49

8 **Q.** My calculations are 80 -- or more accurately Google's
9 calculations are 80.6 Farenheit. Does that sound right to
10 you?

11 **A.** Well, yeah. Right around 80 degrees. And when you
12 get to .6, you really don't care.

11:04:59

13 And so, that's the minimum temperature that we have
14 seen for the caution area if you go back to the National
15 Weather Service. That's striking. Okay. So that means
16 that we are seeing for this population in Maricopa County.

11:05:16

17 By the way, that's the desert of Arizona. So if you
18 talk about acclimated people, these are them. That's the
19 temperature where we see an increased risk for the low
20 temperature of the day.

21 And then, if you look for T max, which is the first
22 row that you have got there on the left-hand side for
23 hospitalizations, it's --

24 **Q.** We're talking about the first column, second row here?

11:05:30

25 **A.** Yeah. For the first column, second row it's 40

1 degrees. You see hospitalizations relative risk. So this
2 is a moderate health outcome. These people had -- not
3 from me, but in general, as compared to mortality, a
4 moderate health outcome. That's 40 degrees Celsius. So
5 40 degrees Celsius would be 104 degrees Fahrenheit.

11:05:50

6 So that's right at the point where we move from -- in
7 the next stage of our work. And then, if you get to -- if
8 you get to the mortality relative risk of 41, it's
9 increased.

11:06:11

10 Now, those numbers I have told you, that is where you
11 start to see the statistically significant increase in
12 those outcomes related to heat for Maricopa County. Okay.
13 So there's nine of these. We don't need to go through all
14 of these.

11:06:28

15 But this -- this was data that was lovely to me, not
16 only because of the reasons for it but because of the way
17 I've conducted my career. This is what we wanted to see
18 happen. Maricopa County did a marvelous job of it. But
19 the temperatures that they found coincide perfectly almost
20 with what we have been recommending to decision-makers as
21 cautionary up to danger for the various health outcomes.
22 So this was -- this was really great work.

11:06:48

23 **Q.** And just to explain some of the terminology in here, I
24 think we've said that the bottom row, the emergency
25 department visits, that's trips to the emergency room?

11:07:07

1 A. Right.

2 Q. Hospitalizations, what does that kind of mean in the
3 literature?

11:07:17

4 A. That means either directly hospitalized or you were
5 hospitalized after going to the emergency department.

6 Q. Okay. So you had to actually spend time in the
7 hospital?

8 A. You were admitted to the hospital, yeah.

9 Q. Right.

11:07:25

10 A. You were admitted and discharged from the hospital.

11 Q. And mortality, obviously, means death?

12 A. Right. Small numbers in this study.

13 Q. All right. And do you know what the population size
14 the researchers were looking at here was?

11:07:37

15 A. Well, this is for whatever the population of Phoenix,
16 Arizona is. I mean it was -- if I'm not mistaken, the
17 mortality data was from 2000 to 2011. The ED and
18 hospitalization visits was, if I'm not mistaken, January
19 1, 2008, to December 31, 2012. Something like that.

11:07:58

20 That's pretty close.

21 Q. If you could just explain for the Court kind of what
22 the different columns show here, the T max versus T min --

23 A. Yeah. I mean, it seems to me pretty obvious; but I'm
24 strange. The T max is the maximum temperature that they

11:08:14

25 had for that day with a one-day lag for these things. You

1 always have a one-day lag, a one- to two-day lag. You
2 don't want to know that.

3 T mean is the average temperature of highest and low.
4 So what was the temperature that the population had? T
11:08:29 5 mean is not the greatest measure, but what was the -- what
6 was the average temperature that day? What did people
7 have for the whole day?

8 And then, T min is how low did it go? How cool did it
9 get that night before we saw these, with one-day lag,
11:08:45 10 before we saw these health outcomes? That's really,
11 really important.

12 One of the measures of the impact of a heat wave is --
13 and this is fairly arbitrary. But the data has supported
14 it and this data supports it quite nicely is: Did it get
11:09:00 15 below 80 degrees? And the idea behind that is if you can
16 get below 80 degrees, the feeling is that the human
17 body -- a healthy human body, even some human bodies with
18 comorbidities, gets a chance to respite. Gets a chance to
19 regear itself and prepare itself for the next day's heat.

11:09:21 20 Extreme heat events in the United States, by
21 definition, don't get below 80 degrees. When Chicago,
22 Cincinnati, Minneapolis talks about we're going into a
23 period of three or more days of an extreme heat event,
24 it's above a certain temperature for the daytime and not
11:09:39 25 below 80 for the nighttime temperature.

1 So when you see this supported by the health data, it
2 helps to support some of the measures that we have been
3 talking about for the last ten or 15 years.

4 MR. MEDLOCK: David, if you would go to the next
5 slide, please.

11:09:52

6 **Q.** (By Mr. Medlock) I believe this is another chart from
7 the Petitti study, Doctor. If you could explain this to
8 the Court?

9 **A.** It's just an easier way to represent what I have just
10 been talking about. It's, again, on the Y axis you have
11 got daily maximum temperature. And then, you have got
12 mortality, heat-related hospitalizations and heat-related
13 ED visits. And you can see that the highest quadrant is
14 for heat-related mortality. We would expect those
15 temperatures to be the highest where we saw the greatest
16 impact on mortality. And then hospitalizations slightly
17 lower, and ED visits slightly lower than that.

11:10:05

11:10:26

18 It's data that if you had an opportunity as a public
19 health expert to draw up the results of a study before you
20 conducted it, it would look a lot like this.

11:10:43

21 **Q.** I want to focus on the far right-hand column, the
22 heat-related emergency department visits. The minimum --
23 and just to give -- to help clear up the record, it looks
24 like the -- well, first, let's start with what does the
25 dot at the bottom there in the far right column mean?

11:11:03

1 **A.** From what I understand is that that was the
2 temperature at which they first saw events of this type
3 after a one-day lag. Okay. That's the minimum risk
4 temperature. We are seeing a risk at this point.

11:11:18

5 And then, the next one was an increasing risk
6 temperature; and that's where they saw it above an odds
7 ratio of 1.0. All right.

11:11:33

8 And then, the final one was where it -- the number of
9 events was over the 95 percent confidence interval that
10 you would have expected with the 1.0. So it's an
11 increasing way of looking at the data.

11:11:57

12 **Q.** Okay. And it looks like the temperature at the -- in
13 the far right corner, that dot, is about 22 Celsius, which
14 again, according to Google, is about 71.6 Fahrenheit. Does
15 that sound about right?

16 **A.** Yeah. That's right.

11:12:15

17 **Q.** And then, again, it gives some context. The highest
18 dot in that column, the big red dot, is at about
19 39 degrees Celsius, which is about 102 Fahrenheit; is that
20 right?

21 **A.** Yes.

22 MR. MEDLOCK: David, if you would go to the next
23 slide, please.

11:12:36

24 **Q.** (By Mr. Medlock) Doctor, this slide is from the
25 Semenza study that you were a co-author on.

1 **A.** Not this slide.

2 **Q.** Not this slide?

3 **A.** No. I directed this study. I was the branch chief of
4 this study. I was a co-author on the heat-related
5 morbidity study of Chicago.

11:12:48

6 **Q.** Which study is this from?

7 **A.** This is the mortality study. This was the big study
8 that reignited the interest in heat waves.

9 **Q.** Got you. Have we admitted that study as an exhibit
10 today?

11:13:01

11 **A.** No.

12 **Q.** Okay. We'll go ahead and skip that slide then.

13 Now, Doctor, have you reviewed this data before?

14 **A.** Yes.

11:13:22

15 **Q.** Could you describe for the Court what this data is?

16 **A.** Well, this was a statistical representation of the
17 actual temperature data that was measured in the three
18 dorms of the Pack Unit for that period of time.

19 **Q.** I'll represent for you that this is the heat plus, the
20 temperature plus humidity.

11:13:42

21 **A.** It's the heat indices, yeah.

22 **Q.** And this is the actual data actually recorded on the
23 temperature logger or temperature and humidity loggers
24 from August 27, 2014, to October 6th, 2014. What jumps

11:14:04

25 out at you about this data --

1 **A.** Well, it's --

2 **Q.** -- Doctor?

3 **A.** It's what we have just been spending some time talking
4 about. For the most part, there is long periods of time
11:14:15 5 that the temperatures, the heat indices are above the
6 caution zone and into the danger zone. And we have data
7 that supports the fact that we would expect to see health
8 effects when those temperatures are at those levels for
9 that period of time. That's the first part, before it
11:14:37 10 goes below 80 degrees for any length of time, is about a
11 two-week period from 8-27 to 9-11.

12 **Q.** It appears that orange line represents the 80-degree
13 mark?

14 **A.** Yes.

11:14:52 15 **Q.** So all data points above that orange line would be
16 times when it was above 80 degrees inside the Pack Unit?

17 **A.** Yes.

18 **Q.** And then, similarly, there is a red line at
19 90 degrees. Do you see that?

11:15:05 20 **A.** Yes.

21 **Q.** Again, all those data points would be times it was
22 above 90 degrees in the Pack Unit?

23 **A.** Right.

24 **Q.** All those data points above 80 and 90 degrees, does
11:15:15 25 that concern you as an epidemiologist trying to protect

1 the public from dangers of extreme heat?

2 **A.** Well, yeah. I mean, these are temperatures -- these
3 are heat indices. I may say temperatures once in a while,
4 but we are always talking about heat indices here. These
5 are heat indices that we know increase the risk of the
6 general population to suffer effects from heat waves and
7 certainly increase the risk from people who have risk
8 factors that cause them to be more affected by heat.

9 The concern that you see here for at least the first
10 part of this graph is that there is really no time that it
11 goes down below 80 degrees from the cautionary period.

12 **Q.** Doctor, do you believe that TDCJ should be recording
13 this type of data all the time as opposed to just these
14 few weeks in the fall of 2014?

15 **A.** Well, certainly.

16 MR. MOCZYGEMBA: Objection. This is outside of
17 Dr. McGeehin's expert report.

18 THE COURT: No. I think it falls within his
19 expertise. I am going to allow it.

20 MR. MOCZYGEMBA: Your Honor, may I get a ruling.

21 THE COURT: It's denied.

22 **A.** Well, certainly, you can't make plans, you can't
23 determine the risk if you don't have the measurements.
24 You have to have the -- you have to have the information
25 in order to decide what your plan should be to reduce the

1 risk.

2 MR. MEDLOCK: David, if you would go to the next
3 slide, please.

11:16:43

4 **Q.** (By Mr. Medlock) Doctor, I'll represent to you that
5 this is the data as projected backwards. This is not the
6 actual temperature modeling but what our statistician
7 projected the temperatures would have been during the rest
8 of the summer of 2014.

11:17:03

9 Do these temperature and humidity readings also
10 concern you, Doctor?

11 **A.** Yeah. For the same reasons as I just talked about.
12 There is a long period of time where the temperatures are
13 above 90 degrees during the day and don't go -- don't fall
14 out of the cautionary period at night.

11:17:17

15 **Q.** And that would be because when it doesn't get below 80
16 the body kind of lacks that ability to reset itself as you
17 mentioned; is that right?

18 **A.** The body needs a time when it's not subjected to the
19 hazard of heat.

11:17:30

20 **Q.** If it doesn't get that time, the risk increases?

21 **A.** Yes. That's why the definition of a heat wave in the
22 United States includes minimum temperature.

11:17:46

23 **Q.** In light of this data, do you believe that TDCJ's
24 policies that you have looked at today and in the past are
25 effective at preventing heat-related illness at the Pack

1 Unit?

2 **A.** Well, this -- this graph doesn't really allow me to
3 answer that question. What this graph tells me is that
4 the people who are living in these dorms are at an
5 increased risk of suffering consequences from heat because
6 their environment is always above the cautionary level and
7 gets into extreme caution and up to the danger level a
8 number of times. So that's what this tells me.

9 **Q.** What would it tell you when it hits the danger level?
10 What does that mean to you?

11 **A.** It means there is an increased risk of health
12 consequences and that it's a more rare event than the
13 cautionary. And then, you can go back to the Maricopa
14 County data and say, well, at this point we're starting to
15 see a statistically significant increase of
16 hospitalizations and some deaths. So that's what that
17 tells me.

18 **Q.** Would you -- at these temperature and humidity levels
19 inside the Pack Unit, would you say that it needs to be
20 mandatory that inmates be given an opportunity to get
21 outside of those temperatures to give their body an
22 opportunity to reset?

23 **A.** I think that you have to have an intervention at this
24 point to get these people out of this environment. For
25 the reasons I gave before and for the reasons I gave in my

1 deposition, my feeling from a public health standpoint is
2 that has to be mandatory.

3 **Q.** Is there a concept in public health interventions
4 called a confounder?

11:19:31

5 **A.** Yes.

6 **Q.** What is that, for the Court?

11:19:45

7 **A.** That's very hard to explain. But a confounder
8 basically changes the association relationship between an
9 outcome and an exposure. Okay? It has to be related to
10 both of those to be a confounder. People who are not
11 epidemiologists use the term "confounder" maybe more
12 loosely than they should. But that's what a confounder
13 is. It's a -- and it can change the association between
14 the two.

11:19:59

15 **Q.** What would an example of a confounder be when looking
16 at trying to get people into air-conditioned spaces?

11:20:19

17 **A.** Well, a confounder would have to be related to both
18 the increased risk and, in this case, the intervention.
19 And so, if you had people that for some reason did not --
20 and it was not mandatory, I'm assuming the question is,
21 and they did not want to go, they did not want to move to
22 the area that is air-conditioned, but that also increases
23 their risk, that's the other thing that's related to,
24 that's a confounder.

11:20:34

25 So in this case, in my opinion, they were the things

1 that I mentioned before the break.

2 **Q.** And what kind of barriers like that that would
3 decrease people's desire to take advantage of a
4 non-mandatory intervention? What kind of examples would
5 those be?

11:20:52

6 **A.** For a free-living population or for this population?

7 **Q.** Let's talk about this population.

8 **A.** Well, anything that might impair their mobility that
9 they don't want to get up and go do this. It could be the
10 obesity. It could be cardiovascular illness. It could be
11 COPD. All of those things tend to keep people more
12 sedentary, less likely to move.

11:21:06

13 There could be psychiatric reasons. Again, I'm not a
14 physician. I wouldn't want to say that. But anything
15 that impairs the cognitive capacity to understand that
16 this is a beneficial thing to do.

11:21:24

17 They could be socially-isolated people who just don't
18 want to commune with people in this area, which I'm not
19 exactly sure what it is.

11:21:45

20 The other thing that we have found in cities is that
21 there needs to be something that attracts the people to go
22 there. Now, that's non-mandatory. What we found for a
23 number of cities -- and Philadelphia was one -- and all
24 cities try to provide air-conditioned areas where they can
25 bus people to -- is that there is nothing to do there. If

11:22:02

1 it's just plastic chairs sitting around, after two or
2 three days, people don't come.

3 So I don't know what the intervention is that's
4 planned in this case, but there has to be something that
5 you can't just sit for three hours. And after two or
6 three days, most people don't want to go and do that.

7 **Q.** Especially in the context when it's voluntarily?

8 **A.** Well, yes.

9 **Q.** All right. I would like to --

10 **MR. MEDLOCK:** David, if we could move to the next
11 slide, please.

12 **Q.** (By Mr. Medlock) Now, I'll represent for you that I
13 pulled this off of The Weather Channel's website
14 yesterday. At these upcoming heat and humidity measures,
15 would that concern you at the Pack Unit? This is the
16 data, the upcoming ten-day forecast for Navasota, Texas.

17 **MR. MOCZYGEMBA:** Again, I object. This is
18 outside his expert report. He has not given an opinion
19 about any temperatures this summer.

20 **THE COURT:** The other side hasn't seen this.
21 This is not something he has seen, right?

22 **MR. MEDLOCK:** No. But it is, you know, the
23 commonly available -- I mean, we could ask that you take
24 judicial notice of it, Your Honor. It's temperature and
25 humidity data about the weather.

1 THE COURT: Did he opine on something like this
2 in his report?

11:23:24

3 MR. MEDLOCK: I would say that the heat index
4 chart is essentially conveying the same information. This
5 just happens to be the upcoming data as opposed to, you
6 know, historical data that he has just opined on from
7 inside the Pack Unit.

11:23:40

8 MR. MOCZYGEMBA: Your Honor, if I may briefly.
9 There is a fundamental difference between looking at
10 information in the past and opining on it and claiming
11 that you opined on information in the future using the
12 same method. This is fundamentally different. It's
13 outside his expert report. Insufficient foundation for
14 it, as well.

11:23:52

15 THE COURT: I'm going to sustain this objection.
16 I'm sorry.

17 MR. MEDLOCK: If I could lay a foundation, Your
18 Honor.

11:24:01

19 THE COURT: Well, my concern is it's not in the
20 report. It's not -- I don't know if the foundation helps
21 any.

22 MR. MEDLOCK: Fair enough, Your Honor.
23 David, if you would move to the next.

11:24:17

24 Q. (By Mr. Medlock) And, Doctor, I will try not to spend
25 too much time on this topic. Is heat illness

1 underreported?

2 **A.** Yes.

3 **Q.** Why is that?

4 **A.** Because of the -- because of the way most --

11:24:29

5 THE COURT: He has already testified to this. It
6 doesn't cause infrastructure damage the way a hurricane --
7 Doctor, you don't purport to have expertise in climate
8 change, do you?

11:24:43

9 THE WITNESS: In health effects of climate
10 change, yes, sir, I do.

11 THE COURT: Do you have an opinion as to whether
12 the climate is changing?

13 THE WITNESS: The climate is changing, Your
14 Honor.

11:24:50

15 THE COURT: Okay.

16 **Q.** (By Mr. Medlock) And just to follow-up on what the
17 Judge was asking. If -- is the -- in addition to, you
18 know, buildings not being knocked down to lead to illness
19 being underreported, are there phenomena that have been
20 observed in the epidemiological community about lack of
21 data being collected by medical examiners or doctors that
22 would inform whether other conditions are heat-related
23 illnesses?

11:25:06

24 **A.** Yeah. There has actually been some investigation of
25 that. And the National Association of Medical Examiners

11:25:21

1 has looked at that. The definition of heat-related
2 mortality, if it's strictly adhered to, is a core body
3 temperature of over 105 degrees. Many people, of course,
4 are not found when they are dead in a timely manner where
5 that can be recorded.

11:25:43

6 Another -- frequently the environmental conditions the
7 body is found in or a person died in is not considered
8 either by the physician filling out the death certificate
9 or by the medical examiner. So it is underreported, and
10 it's pretty standardized that people understand that.

11:25:59

11 THE COURT: Autopsies are much less common than
12 they used to?

13 THE WITNESS: Much less common. They are
14 expensive, and they are not done that often.

11:26:11

15 **Q.** (By Mr. Medlock) I think it will be represented to
16 you that in TDCJ every patient is given an autopsy. Even
17 in that circumstance, would you consider autopsies --
18 under those facts, would you consider heat illnesses or
19 heat-related deaths to be undercounted?

11:26:30

20 **A.** I don't know what their autopsy includes but it -- it
21 depends on what you are calling heat-related deaths. If
22 you are talking about deaths that are totally from
23 heatstroke that lead to death, the autopsy will probably
24 pick that up. If there is cardiovascular disease, COPD or
25 something in a person in a hot environment, the autopsy is

11:26:46

1 going to show that the death was caused by cardiovascular
2 disease, COPD or something like that.

3 **Q.** Would it be your opinion that to only count
4 hyperthermia or heatstroke deaths as being heat-related
11:27:03 5 deaths to be severely undercounting the number of
6 heat-related deaths?

7 **A.** Right. That's not just my opinion. That's
8 well-accepted by everyone, yes.

9 **Q.** The journal -- the American Journal of Preventive
11:27:17 10 Medicine article that we've admitted into evidence, does
11 that kind of summarize -- what we have got on the screen
12 there -- why heat-related illnesses and deaths are
13 undercounted?

14 **A.** Yes.

11:27:27 15 **MR. MEDLOCK:** May I approach, Your Honor?

16 **THE COURT:** Yes, you may.

17 **Q.** (By Mr. Medlock) Keep it blank.

18 **A.** Keep it blank?

19 **Q.** Yeah. Do you have a pen?

11:27:38 20 **A.** Okay.

21 **MR. MEDLOCK:** David, can you give me the next
22 chart, please.

23 **Q.** (By Mr. Medlock) Doctor, I'll represent to you that
24 this is a chart that has been included in Dr. Means' --

11:27:55 25 TDCJ's expert -- report.

1 For the Court, what problems do you see with this
2 chart as an epidemiologist?

3 **A.** Well, I mean, there are a number of different problems
4 with it. Small problems and larger problems. The small
5 problem of seeing annual numbering and not defining what
6 the "N" is is a problem. But because it was first shown
7 to me in my deposition, someone told me that that's the
8 number of inmates that may have been in prison that year.
9 And that's a little bit of a problem, but not a big
10 problem. I wouldn't worry too much about that.

11 The main problem is that the statistics that are in
12 this, the work that the statistician does is fine. I
13 mean, there is nothing wrong with that. It's what is
14 underneath the statistics that is problematic. And that
15 is that the two time periods that are looked at and
16 compared and I -- and the assumption, then, is that
17 because the confidence intervals don't overlap that, in
18 fact, we're not seeing an increase in deaths that might be
19 attributed to heat during the summer months is slightly
20 fallacious.

21 And the reason for that is: When you say that, you
22 are assuming that the periods of time that you are looking
23 at are normally equal in deaths in the United States.
24 And, in fact, they are not.

25 It's historically been true and is still true to this

1 day that the three months that have the highest death rate
2 in the United States are November, December and January,
3 with February right behind. The three months with the
4 lowest deaths rates in the United States are June, July,
5 and August.

11:29:47

6 So when you compare them and say they are equal, so
7 we're not seeing any impact from heat, you're -- you know,
8 in the vernacular, you are comparing apples to oranges
9 here.

11:30:02

10 The other problem is that -- you know, I have a little
11 bit of a problem with throwing May into this. And there
12 is -- there is something called the null hypothesis in
13 epidemiology. And if you do a study that you are trying
14 to look at the risk of smoking and bladder cancer, for
15 example, there are things that might occur where it
16 supports the null hypothesis.

11:30:20

17 In other words, data are in there that instead of
18 edification of the association, they are confusing the
19 association.

11:30:35

20 Putting May into the high months when we wouldn't
21 expect to see a lot of deaths in May attributed to heat in
22 the United States or even in the Houston area supports the
23 null hypothesis. If there is, in fact, an effect in June,
24 July, August and the first part of September, which my
25 guess would be they are the hottest, you are diluting that

11:30:58

1 effect by including May and the second half of September.
2 You are diluting that effect. I mean, there is just no
3 way around it. It's supporting the null hypothesis.

11:31:12

4 You could say that -- I mean, you could say that about
5 some of the other months now. But if that's the
6 comparison, those are the concerns I have; and they are
7 pretty big concerns.

11:31:30

8 Now, in the United States if you took January and
9 December as one, I mean, just that is the rate, one, you
10 would expect to see in June, July and August the rate drop
11 down by 16, 18 percent. So if that's one, down here we
12 are seeing 84 or 82, .84 and .82. It's a drop; and then,
13 it goes back up.

11:31:53

14 As I mentioned to His Honor earlier today, we're not
15 sure why we are seeing such an increase. But we have seen
16 it forever. This is what happens in death in the United
17 States. So you just can't take these two periods and
18 compare them and say, oh, there is not a difference. So
19 there is not a problem.

11:32:05

20 **Q.** If the distribution of deaths in TDCJ were normal like
21 you are describing the rest of the United States, is it my
22 understanding that you would expect to see 16 to
23 18 percent fewer deaths in the summer rather than a static
24 number like this chart shows?

11:32:21

25 **A.** That's true.

1 Q. Okay. Would you mind -- the pen and the piece of
2 paper that I gave you, would you just draw a basic curve
3 with, you know, January on one side of the page and
4 December on the other of the distribution that you would
5 expect deaths to occur based on the testimony you just
6 gave?

7 MR. MOCZYGEMBA: Your Honor, no disrespect to
8 Dr. McGeehin; but I have serious doubts about his ability
9 to draw a curve based on some sort of statistical
10 calculation that accurately represents the data here.

11 THE COURT: Well, I don't know that we need it.

12 MR. MEDLOCK: Okay.

13 THE COURT: He has already testified that deaths
14 occur most commonly in November and December and January.
15 And I think I was independently aware of that. So let's
16 move on.

17 Q. (By Mr. Medlock) Okay. In the phenomenon about
18 deaths occurring at a greater frequency in the winter,
19 does that vary by geography in the United States?

20 A. It hasn't been found to vary by geography. I mean,
21 it's always been considered that that was a possibility,
22 but it hasn't been found to be that.

23 Q. Do you know if Dr. Means' chart here has been peer
24 reviewed?

25 A. You would have to ask Dr. Means. I would say probably

1 not if it hasn't been published or perhaps counsel brought
2 in peer reviewers to look at it.

3 I mean, there are two ways to do peer review. And
4 that is to submit it to a journal -- three ways. Put it
5 through a government agency or bring in peer reviewers
6 solely so that you could say it's a peer-reviewed article.

7 **Q.** Doctor, I want to kind of change gears and talk about
8 the hazard of arsenic. I believe you were here for most
9 of the testimony yesterday afternoon?

10 **A.** I was.

11 **Q.** Have you reviewed any documents related to the arsenic
12 levels at the Pack Unit?

13 **A.** I have reviewed some sampling documents for arsenic.

14 **Q.** Can you -- and taking into account what the Court
15 heard yesterday about what a maximum contaminant level is,
16 could you briefly explain that and add anything that you
17 think was left out from yesterday? I don't want to
18 duplicate too much testimony.

19 **MR. MOCZYGEMBA:** Your Honor, I have to object to
20 improper foundation for this testimony.

21 **THE COURT:** Is this in the report?

22 **MR. MEDLOCK:** Yes, Your Honor.

23 **THE COURT:** The arsenic level is?

24 **MR. MEDLOCK:** I'm not sure that the level is, but
25 he does discuss his concerns about the arsenic in the

1 water at the Pack Unit.

2 MR. MOCZYGEMBA: Your Honor, that's not the basis
3 of my objection.

4 THE COURT: Yours is foundation?

11:34:57

5 MR. MOCZYGEMBA: Yes, Your Honor.

6 THE COURT: Lead him through a few more questions
7 before you ask the ultimate question.

11:35:09

8 **Q.** (By Mr. Medlock) Did part of your work at CDC,
9 Dr. McGeehin, involve looking at safe drinking water
10 standards?

11 **A.** Yes.

12 **Q.** Did part of your work at CDC involve evaluating what
13 levels of arsenic were safe in drinking water?

11:35:23

14 **A.** We looked at arsenic in a number of different
15 communities in the drinking water and looked at possible
16 health impacts. It wasn't to evaluate what levels were
17 safe. It was to look at the possible association between
18 arsenic and health community concerns -- health concerns
19 in the community.

11:35:43

20 **Q.** And did you hear all the evidence about the levels of
21 arsenic at the Pack Unit yesterday?

22 **A.** I did.

23 **Q.** Okay. With that foundation being laid, was there
24 anything else that was left off yesterday about what a
25 maximum contaminant level is?

11:36:02

1 MR. MOCZYGEMBA: Your Honor, same objection.
2 Improper foundation. If you look back at Dr. McGeehin's
3 testimony, he said, "We looked at arsenic." It was -- he
4 has not described his own skills, knowledge, education,
5 experience or training to evaluate arsenic levels at the
6 Pack Unit.

11:36:16

7 THE COURT: He looked at arsenic in a number of
8 different communities in the drinking water and he was
9 looking for the association between arsenic and health
10 concerns in the community. I think it's sufficient
11 foundation. I'm going to allow it. Objection is denied.

11:36:28

12 Q. (By Mr. Medlock) I'm sorry. Maximum contaminant
13 levels. Anything that you can add to what was testified
14 to yesterday?

11:36:46

15 A. No. And I am not sure what the -- what you want me to
16 say. I mean, the MCL is determined by EPA in a very
17 involved process based on epidemiologic and bioassay
18 evidence. The MCL of 10 was reduced in 2001 -- I mean,
19 from 50 to 10 based on new data. There were people at the
20 time -- and this wasn't testified to yesterday -- but that
21 EPA also looked at moving it to three parts per billion
22 and five parts per billion. That there are a series of
23 meetings and reviews that that goes through before it
24 becomes a rule. And that the MCL of 10 -- although
25 it's -- MCLs are looked at on a regular basis. It still

11:37:10

11:37:32

1 is the maximum contaminant level for providing drinking
2 water to the United States population for arsenic. It
3 hasn't changed.

11:37:50

4 I believe New Jersey dropped theirs from .05 to 5.
5 The World Health Organization uses 10 as its recommended
6 level. So, I mean, that's what the MCL is.

11:38:13

7 Now, there was some discussion yesterday about the
8 cancer slope and the -- they didn't mention this, but the
9 no threshold level that determines low levels of cancer on
10 known carcinogens. That is controversial when you get
11 below a certain level.

12 But, you know, MC -- the law right now for providing
13 drinking water to the United States population is 10.

11:38:33

14 **Q.** And you mentioned that New Jersey has a level of .05.
15 Some other people were --

16 **A.** Five if you are talking about 10.

17 **Q.** Fair point. Yes.

11:38:47

18 You were -- and you mentioned that other people
19 advocated for MCLs of 30 or 50. Is it fair to say that 10
20 is a compromise number that the EPA reached?

21 **A.** You know, I am not familiar with the people that
22 advocated for 30 or 50. The original rulemaking -- and I
23 attended meetings with EPA when this rule was being put in
24 place. It intended -- the intended rulemaking looked at
25 three and five and 10.

11:39:08

1 There is always some compromise when making Safe
2 Drinking Water Act determinations. Part of it is what is
3 the methodology that can get you down to that level and
4 how is it going to impact the water systems and, of
5 course, the health data and interpolating the data down to
6 levels of this five and 10 parts per billion.

11:39:22

7 **Q.** And what amount of drinking water does the MCL assume
8 that a person is drinking, actually consuming?

9 **A.** Normally it's two liters a day for a 70-kilogram
10 person for a lifetime or 70 years.

11:39:46

11 **Q.** And there was some discussion about the I-A-R-C, the
12 IARC, yesterday?

13 **A.** Right.

14 **Q.** Is it fair to say that's kind of the gold standard for
15 where safe levels of contaminants are?

11:40:05

16 **A.** The IARC, the International Agency for Research on
17 Cancer, is the premiere scientific reviewer of cancer data
18 in setting of those levels, yes.

19 **Q.** Do you have any problem with Dr. Honeycutt's testimony
20 regarding how he came to disregard some of the IARC data?

11:40:29

21 **A.** Well, you know, I don't think you can just disregard
22 data. I mean, if IARC comes up with a slope, that's a
23 process that a number of esteemed scientists have gotten
24 together, reviewed all the data, met and filed this

11:40:50

25 report. It takes usually about a year to do that.

1 And you don't get to pick and choose your science. I
2 mean, if you are going to say IARC is the eminent agency
3 and they do this, then you've got to take that science.

4 Now, you may say -- and there is a lot of people that
11:41:08 5 say this -- that I don't believe in the no threshold
6 level. I believe that there is a threshold. The low is
7 we don't cause cancer for various contaminants.

8 But an enforcement agency, when the level is set based
9 on the epidemiologic data, then that's what you go with.

11:41:27 10 You can't pick and choose the science.

11 **Q.** Now, there was also some testimony yesterday about
12 that it takes decades to develop cancer from arsenic
13 exposure. From an epidemiological perspective, could you
14 address that testimony?

11:41:39 15 **A.** It does take decades to develop cancer. I mean, it
16 takes less time to develop various leukemias and
17 lymphomas.

18 Childhood cancer, obviously, can't take decades. It
19 takes less time.

11:41:54 20 But the cancer mechanism is such that we see the
21 tumors -- most tumors occur in a person's sixth and
22 seventh decade.

23 Now, what the process is over that period of time we
24 are not 100 percent sure of. In general, we usually say
11:42:11 25 that exposure from environmental contaminants takes

1 decades of exposure to cause cancer.

2 **Q.** Would there be an increased risk for every year that
3 someone was exposed to a contaminant like arsenic that
4 they would develop a cancer?

11:42:27

5 **A.** Exposure is based on, in this case, dose and duration.
6 The dose comes from the concentration and the amount of
7 water. That's your dose. The duration comes from how
8 long you are going to be drinking it. So when you
9 increase dose, when you increase duration, you increase
10 risk.

11:42:43

11 **Q.** So drinking more water to counteract the heat would
12 increase your dose, correct?

13 **A.** Of a -- yes, if you were drinking contaminated water.

14 THE COURT: If you are talking about a

11:42:56

15 decade-long process, that would still be only a slight
16 enhancement of the process, right?

17 THE WITNESS: It would be ten years of drinking
18 water above the MCL. And there would be mathematical
19 calculations that could be done to show on a mathematical
20 standpoint how much that would increase your risk of
21 bladder or skin cancer.

11:43:16

22 Now, do we know what a decade of that really means to
23 a person drinking it? We really don't know that, Your
24 Honor. We really don't.

11:43:31

25 **Q.** (By Mr. Medlock) And for someone like Mr. Brannum who

1 had been at the Pack Unit for a decade and has testified
2 that he drinks very, very large quantities of water, would
3 you be concerned about the increase in his risk of cancer?

4 **A.** Well, I mean, the word "concern" is concerning. I'm
5 not sure -- what I will say is that if they drink a lot of
6 water with water that's contaminated with a known human
7 carcinogen and they drink it for years at a time, they are
8 increasing their risk. It's just no way around that.
9 That is a fact.

10 **Q.** Would the CDC ever encourage people to address the
11 effects of heat by drinking large amounts of water that
12 had a known carcinogen like arsenic in it?

13 **A.** No.

14 MR. MOCZYGEMBA: I'm going to object.

15 Dr. McGeehin is no longer with the CDC. He can talk about
16 his own personal recommendations.

17 THE COURT: I think he was with them long enough.
18 He would know their policy on this.

19 **A.** No.

20 **Q.** (By Mr. Medlock) And why not?

21 **A.** I mean, for so many obvious reasons that I really
22 probably don't have to go into.

23 **Q.** If you would, please, though, for the record.

24 **A.** Go into them?

25 **Q.** Yes.

1 THE COURT: Well, I think the government agency
2 is never going to recommend something that's known to be
3 bad for one's health. Is that basically the reason?

4 THE WITNESS: That's the reason.

11:45:06

5 THE COURT: Yeah.

6 Q. (By Mr. Medlock) You would agree that in this case,
7 though, there is a government agency, the Texas Department
8 of Criminal Justice, that is making that recommendation,
9 right?

11:45:16

10 MR. MOCZYGEMBA: Objection. That
11 mischaracterizes the testimony.

12 THE COURT: Yeah. I don't think that's quite it.
13 Do you know enough about state policies on arsenic and
14 drinking water to be able to say whether the policy of the
15 TDCJ is an outlier? If you don't know, that's fine.

11:45:31

16 THE WITNESS: Well, I couldn't comment on that I
17 don't think, Your Honor, the way that question was posed.
18 I did listen to the gentleman's testimony yesterday about
19 the form letter that was sent in 2016 about do not change
20 the water. You don't need to change the water. This is
21 not an emergency. It appears that that is something that
22 the U.S. EPA has agreed to send out. I have concerns
23 about that from a public health standpoint.

11:45:53

24 THE COURT: But it would suggest that TDCJ is not
25 an outlier, right?

11:46:10

1 THE WITNESS: It's an outlier to have
2 consistently high levels above the MCL and provide it to
3 people. I mean, there are water systems around the
4 country, particularly out west, that are having a great
5 deal of trouble meeting the arsenic standard. But the
6 vast majority of water systems in the United States have
7 met that standard.

11:46:26

8 Q. (By Mr. Medlock) And I want to talk with you a moment
9 about that letter that is sent by the EPA. Do you have
10 any understanding of why that letter would be sent out?

11:46:40

11 A. Well, I'm --

12 MR. MOCZYGEMBA: Your Honor, I'm going to have to
13 object on speculation on this. I don't think he can
14 testify as to why the EPA would send the letter out.

11:46:51

15 THE COURT: Do you feel you would have any
16 insight on that or would you be speculating?

17 THE WITNESS: I would be speculating.

18 THE COURT: Okay. Let's move on.

19 Q. (By Mr. Medlock) Do you think the considerations
20 taken into advising people not to seek an alternative
21 water source should be different when those people are
22 incarcerated?

11:47:00

23 A. Yes.

24 Q. Explain why, please.

11:47:17

25 A. Well, they don't have any choice in how they get their

1 water. The water is supplied to them. And they are
2 not -- they don't have -- part of the Safe Drinking Water
3 Act amendments was to give people knowledge about their
4 water, which is why those messages are going out when
5 people are not in compliance.

11:47:37

6 The reason for that is an informed community can make
7 decisions for themselves. They can make decisions whether
8 to get an alternate water supply for drinking water for
9 them and their children, or they can make a decision to
10 take political action with their county commissioners and
11 things like that. So an informed public is a big part of
12 the Safe Drinking Water Act amendment.

11:47:52

13 In this case, you have people who are being supplied
14 water that is above the MCL for a known human carcinogen
15 for an extended period of time who have no alternative in
16 where they get their drinking water, except if they buy a
17 small bottle of water for a cost of 30 or 45 cents or
18 something like that. In periods of extreme heat that
19 would begin to be \$4 or \$5 a day just to drink water.

11:48:08

20 **Q.** Do you have a problem with having inmates spend \$4 to
21 \$5 a day --

11:48:31

22 THE COURT: That is clearly outside his
23 expertise. I mean, he is not an expert on prisons.

24 MR. MEDLOCK: All right.

25 THE COURT: I'll take judicial notice of the fact

11:48:40

1 that most people cannot afford that who are in prison.

2 MR. MEDLOCK: Fair enough, Your Honor.

3 Q. (By Mr. Medlock) Do you believe there should be an
4 alternate water supply at the Pack Unit, given the levels
5 of arsenic in the water and the need for drinking water to
6 combat the heat?

7 A. I think that there needs to be a solution to the
8 arsenic level in the drinking water at the Pack Unit. And
9 I think that the faster that that solution is put into
10 place, the better off everyone is going to be.

11 In the meantime, I think that ten years of waiting for
12 this intervention is too long to wait; and I don't think
13 that they should be exposed for another period of time
14 when we are recommending that they drink a lot of water to
15 water that is above a standard that's been set by the
16 enforcement agencies in the United States.

17 Q. If it were the case that TDCJ could remedy the problem
18 of arsenic levels above the MCL at the Pack Unit by
19 leasing a tanker truck and hiring an employee to drive it,
20 is that something you would recommend?

21 A. See, I wouldn't get into that. What I would say is
22 you need to respond to this problem that you had a long
23 time to respond and you haven't and this has exposed
24 people for an extended period of time. I realize no
25 inmates have been there for a full ten years. But they

1 have been exposed for whatever period of time they have
2 been there. And so, whatever the source would be,
3 providing it is a quality source of water, then that would
4 be a good thing.

11:50:18

5 **Q.** And would the CDC have given an agency like TDCJ ten
6 years to fix a problem like this?

11:50:34

7 **A.** Well, the CDC is not an enforcement agency. The CDC,
8 if we got some information about this, would try to sit
9 down and meet with people and say, you know, This can't
10 continue. We need to figure out some way around this.

11 But not being an enforcement agency, we couldn't
12 force -- we couldn't force the state of Texas to invite us
13 in to even talk about it to begin with, and we couldn't
14 force the TDCJ to do anything.

11:51:01

15 MR. MEDLOCK: Pass the witness, Your Honor.

16 THE COURT: We'll take a 45-minute lunch break.

17 (Recess from 11:51 a.m. to 12:44 p.m.)

18 THE COURT: Defendant may inquire.

12:44:47

19 MR. MEDLOCK: Your Honor, I'm sorry. Before
20 that, we would like to move to admit Dr. McGeehin's CV.

21 THE COURT: Any objection?

22 MR. MOCZYGEMBA: No objection.

23 THE COURT: Admitted without objection.

12:45:00

24 MR. MEDLOCK: I think it will be Exhibit No. 4,
25 Your Honor. I apologize.

1 MR. MOCZYGEMBA: May I inquire, Your Honor?

2 THE COURT: You may inquire.

3 **CROSS-EXAMINATION**

4 BY MR. MOCZYGEMBA:

12:45:44

5 Q. Good afternoon, Dr. McGeehin. We have not met before,
6 have we?

7 A. No.

8 Q. My name is Kevin Moczygemba. Nice to meet you.

9 A. Nice to meet you.

12:45:52

10 Q. Dr. McGeehin, you talked a little bit about how
11 epidemiology works during your direct. I would like to
12 just go back over a couple of those things with you to
13 make sure I understand what you are talking about and the
14 Court understands what you are talking about.

12:46:02

15 You would agree that epidemiology is the study of
16 specific populations, right?

17 A. It's the study of disease in populations.

18 Q. And you would agree that epidemiologists rely on
19 surveillance data to study specified populations, right?

12:46:15

20 A. Surveillance data is very important.

21 Q. And you have even said that surveillance data is the
22 backbone of epidemiology, right?

23 A. It is.

12:46:27

24 Q. And surveillance data normally comes from medical
25 records, correct?

1 **A.** No, not necessarily. It comes from medical records.

2 It comes have vital statistics. It comes from many
3 different places. It comes from active surveillance.

4 **Q.** You would agree that epidemiologists studying heat
5 waves consider healthcare utilization data to be an
6 important source to consider, right?

7 **A.** Absolutely.

8 **Q.** You would also agree that epidemiologists studying
9 heat waves consider hospital admissions information to be
10 an important source, right?

11 **A.** Yes.

12 **Q.** You would agree that epidemiologists studying heat
13 waves consider emergency room admissions information to be
14 an important source to consider, also, right?

15 **A.** I do.

16 **Q.** Let's talk about the types of information that you
17 consider in forming your opinion so we can kind of
18 understand its limits, you know, and what you did here.

19 You never considered any medical records from the Pack
20 Unit, did you?

21 **A.** I did not.

22 **Q.** And you never considered any healthcare utilization
23 information from the Pack Unit, did you?

24 **A.** I did not.

25 **Q.** And you also never considered the number of hospital

1 admissions from the Pack Unit, right?

2 **A.** I did not.

3 **Q.** And you never considered the number of emergency room
4 admissions from the Pack Unit, right?

12:47:37

5 **A.** I did not.

6 **Q.** And you could have asked for this type of information,
7 correct?

8 **A.** I have no idea whether I could have gotten it or not.

12:47:53

9 **Q.** That wasn't my question. You could have asked for
10 that type of information, right?

11 **A.** Yes. It wasn't what I was asked to do but, yes.

12 **Q.** If you had that information, you could have calculated
13 the rates of heat analysis and negative health outcomes at
14 the Pack Unit from heat waves, right?

12:48:07

15 **A.** Based on the data that was supplied to me, yes.

16 **Q.** But you never calculated the risk for the offenders at
17 the Pack Unit, right?

18 **A.** No.

12:48:18

19 **Q.** And you could not exactly compare an incarcerated
20 population with the general population, right?

21 **A.** In what way?

22 **Q.** Well, you -- my understanding or -- case definitions
23 are -- let me back up.

12:48:33

24 Institutionalized populations are not normally
25 included in general epidemiological studies, right?

1 A. They aren't.

2 Q. And the case definition is a crucial aspect of
3 epidemiology, correct?

4 A. Depending what you are looking at, the case definition
5 is very important, yes.

12:48:43

6 Q. All right. And so, the population that you look at
7 and case definition to look at disease in that population
8 are very important factors, right?

9 A. Yes.

12:48:56

10 Q. Yeah. And so, if you are looking at a population that
11 does not include institutionalized persons, it's much more
12 difficult, if not impossible, to compare those two
13 populations, correct?

14 A. Case definition has nothing to do with that question.
15 So I'm not sure what you are asking.

12:49:11

16 The institutionalized populations aren't included
17 because of the difficulty in getting records and things
18 like that on institutionalized populations. But the case
19 definition may be --

12:49:24

20 Q. Okay. Perhaps --

21 A. -- what you are asking. I'm not sure.

22 Q. I'm sorry. Just to be clear, you said that
23 institutionalized populations are not normally included?

24 A. Not normally included, as you asked in an earlier
25 question, right.

12:49:34

1 Q. And there have been no studies conducted in a prison
2 environment with regard to heat-related illness, right?

3 A. None that I'm aware of.

12:49:47

4 Q. Dr. McGeehin, in your binder that you have in front of
5 you, I believe Mr. Medlock introduced a study from some
6 French nursing homes; is that right?

7 A. There was --

8 Q. I'll rephrase.

12:50:03

9 A. -- a French study. It wasn't exclusively of nursing
10 homes.

11 Q. Okay. Well, in your report you talk about studies
12 into deaths in French nursing homes during the European
13 heat wave, correct?

14 A. Correct. There was one, yes.

12:50:11

15 Q. And you are not actually comparing the population at
16 the Pack Unit to the French nursing home population, are
17 you?

18 A. No. As I stated in my deposition, I am not comparing
19 those two populations.

12:50:19

20 Q. And you would agree that the Pack Unit is very
21 different from the French nursing home studies, correct?

22 A. I don't know how different they are.

23 Q. And you are not telling the Court what happened in the
24 French nursing homes could happen at the Pack Unit, right?

12:50:30

25 A. Could. I'm not saying it will.

1 Q. All right.

2 A. I don't know whether it could happen.

3 Q. You have no information about that, correct?

4 A. I don't.

12:50:37

5 Q. And, Dr. McGeehin, let's talk about the studies in
6 your binder from the Chicago heat wave in 1995.

7 A. Yes.

8 Q. I believe it's the Semenza study?

9 A. Yes.

12:50:50

10 Q. The studies from the Chicago heat wave found that just
11 after -- or just having access to air-conditioning in the
12 lobby was an effective heat mitigation measure, correct?

13 A. That's true.

14 Q. And that was a study from the New England Journal of
15 Medicine, right?

12:51:05

16 A. No. It was published in the New England Journal of
17 Medicine. It was a study from the CDC.

18 Q. Oh, thank you. Yes.

19 And, Dr. McGeehin, I believe you testified on direct
12:51:15 20 that the main intervention we have in the developed world
21 for reducing heat-related illnesses is access to
22 air-conditioning, correct?

23 A. Yes.

24 Q. And that doesn't -- when you say "access to

12:51:27

25 air-conditioning," that does not mean living in an

1 air-conditioned building, right?

2 **A.** It does not necessarily mean that; but, of course,
3 that would be access to air-conditioning if you had that.

4 **Q.** And there are currently people in the United States
5 who are not in prison that live in houses without
6 air-conditioning, right?

7 **A.** Yes.

8 **Q.** And there are currently people in the southern United
9 States who are not in prison who live in houses without
10 air-conditioning, right?

11 **A.** Yes.

12 **Q.** And some of those people who are not in prison and
13 live in houses without air-conditioning are at risk from
14 temperatures that -- in the summertime, correct?

15 **A.** Certainly, yes.

16 **Q.** And there are also federal prisons in the south that
17 lack air-conditioning, correct?

18 MR. MEDLOCK: Objection. We don't have the
19 foundation for this, Your Honor.

20 THE COURT: He can say if he doesn't know.

21 Do you have any information on that?

22 THE WITNESS: I do not, Your Honor.

23 **Q.** (By Mr. Moczygemba) And, Dr. McGeehin, you would
24 agree that different levels of heat are hazards for
25 different people in different environments, right?

1 **A.** I'm sorry. I would agree with what?

2 **Q.** I'm sorry. I'll slow down a little bit.

3 You would agree that different levels of heat are
4 hazards for different people in different environments,
5 right?

12:52:27

6 **A.** I would agree that different levels of heat are
7 hazards for everyone depending on how high it is; but I
8 would agree that the relative risk changes depending on
9 the population and the subpopulations, yes.

12:52:38

10 **Q.** And that's because acclimatization is an important
11 factor in heat risk, correct?

12 **A.** That wasn't what I was basing that on. I was talking
13 about subpopulations that have higher risk based on some
14 of their comorbidities or their age.

12:52:51

15 **Q.** But you would agree that acclimatization is an
16 important factor in assessing someone's heat risk,
17 correct?

18 **A.** I don't know how important acclimatization is to
19 assess.

12:52:59

20 **Q.** Well, that wasn't my question exactly. I can rephrase
21 that.

22 Acclimatization is something that affects somebody's
23 heat risk, correct?

24 **THE COURT:** You asked first is it an important

12:53:09

25 factor in heat risk, and now you are asking something that

1 affects somebody's heat risk?

2 MR. MOCZYGEMBA: Yes.

3 THE COURT: Now it's just affects someone's heat
4 risk. Okay.

12:53:23

5 **A.** I don't know the answer to that. It very well may be,
6 but I don't have any studies to show that.

7 **Q.** (By Mr. Moczygemba) You have no knowledge whatsoever
8 whether or not heat risk is affected by acclimatization;
9 is that right?

12:53:34

10 **A.** The knowledge that I have about acclimatization is
11 what we have seen in many heat wave studies in the United
12 States is that we see a greater increase in ED visits,
13 hospitalizations and death the earlier in the year that a
14 heat wave hits. So if a heat wave hits in late June or
15 early July, we see greater health outcomes that I'm
16 talking about than we see if it hits later in the year.

12:53:51

17 That's always been attributed to the fact that people
18 have acclimatized to those temperatures in the earlier
19 month of that summer.

12:54:05

20 **Q.** So there is an association between level of
21 acclimatization and heat risk; is that right?

22 **A.** It appears that there is, that it reduces the heat
23 risk.

24 **Q.** And heat waves are defined as temperatures

12:54:16

25 substantially hotter than average for location at that

1 time of year; is that right?

2 **A.** That's the best way -- that's the best way to define
3 it, yes.

12:54:31

4 **Q.** And so, you know, I think during your deposition there
5 was an example about a heat wave in Minnesota is not the
6 same thing as a heat wave in Texas; is that right?

12:54:47

7 **A.** It may not be, no. That's true. It's very
8 important -- and this is something that the agencies that
9 have been trying to get people to be prepared for and
10 communities prepared for heat is that we do best when we
11 design the plan and design the implementation of the plan
12 and the triggers for the geographical area that the people
13 are in.

12:55:01

14 **Q.** And that's why the National Weather Service field
15 offices use a regional definition for heat wave, right?

16 **A.** Most of them do. My understanding is still some go
17 with the national but, yes.

18 **Q.** Texas uses a regional definition for heat wave at the
19 National Weather Service field office, right?

12:55:14

20 **A.** I believe they do, yes.

21 **Q.** Historically, heat waves have had the greatest impact
22 in the northeast and the midwest and the least impact in
23 the south and southwest, right?

24 **A.** Historically, that's true, heat waves have done that.

12:55:25

25 **Q.** You never mentioned acclimatization in your report for

1 this case, right?

2 **A.** No.

3 **Q.** During your direct examination when you were talking
4 with Mr. Medlock, you talked about risk factors for heat
12:55:38 5 waves. I would like to cover a few points with you on
6 that.

7 Now, you would agree that each heat risk factor
8 presents a different level of risk during a heat wave,
9 right?

12:55:49 10 **A.** What do you mean by "heat risk factor"?

11 **Q.** Well, the risk factors that you testified to earlier
12 today.

13 **A.** Right.

14 **Q.** So each of those risk factors in the heat has a
12:55:59 15 different level of risk, right?

16 **A.** Right. Each of the -- each of the risk factors
17 represents a different risk.

18 **Q.** Let me give you an example, just so we can make sure
19 we are on the same page. I believe in your amended report
12:56:11 20 you use the example of social isolation, which was
21 associated with a 600 percent increase in risk of death in
22 the French study during the European heat wave, right?

23 **A.** That sounds right, yes.

24 **Q.** And so that might be far higher than, you know,
12:56:27 25 somebody taking another medication, right? You have to

1 look at each risk factor independently, right?

2 **A.** That's the way the studies are designed. I mean, when
3 you get all the data, the model looks at all the factors.
4 You model the results. And the model looks at all the
5 factors and gives you risk factors, odds ratios or
6 relative risk factors for those in the model.

7 **Q.** Actually, that's something I think you -- I forgot to
8 ask you.

9 So epidemiologists study risk factors individually,
10 right?

11 **A.** Individually? It's part of the -- it's part of the
12 study to look at those -- to look at -- what I talked
13 about earlier, to look at the association between risk and
14 exposure and then the role risk factors may play in those.

15 **Q.** Let me ask you a slightly different question. Maybe
16 this will get us on the same page.

17 Epidemiologists also study risk factors in
18 combination, right?

19 **A.** Right.

20 **Q.** Epidemiologists study risk factors individually to
21 determine the risk factor, right?

22 **A.** Right.

23 **Q.** And epidemiologists also study risk factors in
24 combination to determine the associated change in the risk
25 factor from the combination, right?

1 **A.** Right. I mean, that could be a confounder or an
2 effect modifier, yes.

3 **Q.** Okay. Yes. Thank you.

4 And each risk factor may affect individuals
12:57:55 5 differently, right, depending on their individual health
6 state?

7 **A.** Sure.

8 **Q.** And, Dr. McGeehin, you would agree that it's not
9 possible to predict human health outcomes just using a
12:58:07 10 heat index because there are so many variables or factors,
11 right?

12 **A.** A health outcome for an individual?

13 **Q.** Let's start with an individual.

14 **A.** Okay. No, it's not possible using solely a heat
12:58:20 15 index. I mean, are you talking about a risk of an
16 individual if it's, say, a certain heat index?

17 **Q.** That's right.

18 **A.** That's not possible to do.

19 **Q.** And you would agree that it's not possible to predict
12:58:32 20 human health outcomes in a population just using a heat
21 index because there are so many variables or factors,
22 right?

23 **A.** No. The only thing that you could say is that the
24 risk is increasing depending on what temperatures you are
12:58:42 25 talking about. It's an increased risk.

1 Q. And that assumes that the populations are comparable,
2 correct?

3 THE COURT: It depends on the sample size,
4 doesn't it?

12:58:53

5 THE WITNESS: Well, the sample size will affect
6 both the odds ratio and the confidence interval around
7 that. So your comfort level with what you found is
8 affected by the sample size. The sample size is huge.
9 Power of the study is huge.

12:59:06

10 But I'm not -- I think I'm slightly misunderstanding
11 your question. If you could ask it again.

12 MR. MOCZYGEMBA: Could you repeat the question,
13 please?

12:59:18

14 THE COURT: It says the only thing you could say
15 is the risk is increasing -- you say that assumes if the
16 populations are comparable, correct?

12:59:34

17 Q. (By Mr. Moczygemba) I think, Dr. McGeehin, what I'm
18 asking you is: You cannot compare the risks from one
19 population to any population, right? They have to be
20 specific populations that you are comparing it to?

12:59:49

21 A. No, no, no. I mean, if that were the case,
22 epidemiology would fail. These risks that we're talking
23 about here have been consistently on different continents
24 and different populations over two decades periods of
25 time. This is how human beings react to heat and

1 humidity. This can definitely be applied across the
2 board. Absolutely applied across the board.

3 We're seeing it in India now. They saw it in Russia
4 two years ago. They saw it in Australia two years ago.

01:00:05

5 THE COURT: Slowly. Slowly for her sake.

6 THE WITNESS: I'm sorry.

7 **A.** Australia two years ago. So, I mean, these risks can
8 be applied to populations of these ages, of these
9 comorbidities, certainly.

01:00:14

10 **Q.** (By Mr. Moczygemba) Just using temperature, you can
11 do that?

12 **A.** I didn't say that.

13 **Q.** I'm sorry. Just using heat index?

01:00:23

14 **A.** Heat index. As heat index increases, we expect to see
15 more and more of these sorts of issues that we have seen
16 in all these other populations.

01:00:37

17 Now, I don't prefer, as I mentioned earlier, for us to
18 implement heat intervention plans based on heat index
19 only, although most places that's all we have got to go on
20 right now. I like numerical --

21 THE COURT: Slowly. Slowly.

22 THE WITNESS: I'm sorry.

23 THE COURT: I know you know the subject and you
24 get going.

01:00:43

25 THE WITNESS: I'm sorry.

1 MR. MOCZYGEMBA: Thank you.

2 **A.** Like what Maricopa County did, as we talked about
3 earlier, that's the best way to do it. But right now, in
4 most places, we have to base the risk on what we have; and
5 that's heat index. As that increases, the risk increases.

01:00:56

6 **Q.** (By Mr. Moczygemba) But you don't know that, correct?

7 **A.** Don't know what?

8 **Q.** You don't know that for sure, right? You are saying
9 that you associate -- let me ask you a different question.

01:01:09

10 Dr. McGeehin, you say in your report that health and
11 weather agencies have made considerable effort to convey
12 the message that heat index represents increasing risk of
13 heat illness for certain populations and individuals and
14 not specific levels of risk, such as heat exhaustion
15 possible, that apply to all people, right?

01:01:23

16 **A.** That's true.

17 **Q.** Okay. And so, the National Weather Service heat index
18 chart is not something that you can take and say that that
19 applies to all people, right?

01:01:32

20 **A.** No, it is something -- I mean, what you are talking
21 about is the application of it; and I'm saying that it
22 does apply to all people. What you are saying is whether
23 or not -- and I guess my report or in my deposition,
24 whichever you are quoting there, is that you can say that
25 at a certain temperature we should see an increase in heat

01:01:49

1 syncope or heat exhaustion. That doesn't work that way.
2 What we see is an increased risk for these things as the
3 temperature and humidity increases.

01:02:11

4 **Q.** The National Weather Service chart was designed for
5 populations of individuals for their -- not for the entire
6 population, correct?

7 **A.** A population of individuals is a population.

8 **Q.** Are you saying that -- well, let's talk about
9 something slightly different.

01:02:29

10 Are you saying there is no scientific basis for
11 someone like TDCJ to use a National Weather Service heat
12 index chart to predict the risk for all people?

13 **A.** Of course not. I've extolled the virtues of the NWS
14 chart earlier today.

01:02:44

15 **Q.** But didn't you in your report say that TDCJ should use
16 OSHA's "Using the Heat Index: A Guide for Employers"?

17 **A.** When they were talking about what they should do with
18 employees, yes, because they made this leap of faith
19 between the National Weather Service heat index chart and
20 specific health outcomes like heat exhaustion and
21 heatstroke and what they should do for those temperatures;
22 and there is no data that supports that.

01:02:59

23 **Q.** Dr. McGeehin, let's talk about your recommendations
24 during a heat wave. Because there are people -- well,

01:03:15

25 there are people in the United States living in houses

1 without air-conditioning throughout the country. We've
2 already talked about that, right?

3 **A.** Right.

4 **Q.** But those people are at risk during a heat wave,
5 aren't they?

6 **A.** Sure. Certainly.

7 **Q.** Just like people who are living in houses outside of
8 air-conditioning or that don't have air-conditioning are
9 at risk, right?

10 **A.** I thought that was the question, that people without
11 air-conditioning were at risk.

12 **Q.** So people who live in houses with air-conditioning are
13 at risk during a heat wave, correct?

14 **A.** Well, a greatly-reduced risk; but they are at risk
15 when they are outside, yes.

16 **Q.** And people who live in houses without air-conditioning
17 are at risk during a heat wave, right?

18 **A.** Certainly both inside and outside the house.

19 **Q.** And so because there is this risk during a heat wave,
20 you and your former employer, the Centers for Disease
21 Control, amongst other agencies, recommended developing
22 heat response plans, correct?

23 **A.** Certainly, yes.

24 **Q.** And heat response plans are an effective way to
25 mitigate the measures of risk during a heat wave, right?

1 **A.** When properly formulated and properly implemented, we
2 believe they are, yes.

3 **Q.** I mean, you would not have recommended heat response
4 plans to the American people if they were ineffective,
5 correct?

01:04:20

6 **A.** No. No. I said but they have got to be the right
7 kind of plan, and they have got to be properly
8 implemented.

9 **Q.** And the Centers for Disease Control certainly would
10 not recommend something like a heat response plan to the
11 American people if it was an ineffective way to deal with
12 a heat wave, correct?

01:04:27

13 **A.** No.

14 **Q.** Let's talk a little bit about what an effective heat
15 response plan entails. An effective heat response plan is
16 activated by the National Weather Service, right?

01:04:41

17 **A.** No. No, it's not. It's activated by whatever agency
18 is activating it. It's frequently triggered by
19 communications with the National Weather Service as to
20 what meteorological conditions are ahead.

01:04:55

21 **Q.** Being activated by -- having a heat response plan
22 activated by the National Weather Service is a best
23 practice, isn't it?

24 **A.** No. We're -- we're just missing it here.

01:05:07

25 **Q.** Okay.

01:05:24

1 **A.** If I am the public health director of Madison County,
2 Wisconsin, I activate the heat response plan. I activate
3 it based on information that is in the written plan that
4 comes from the -- to me from the National Weather Service,
5 if that's our communication or if it's some private
6 company that tells me. But I activate the plan.

01:05:29

7 **Q.** An effective heat response plan involves coordination
8 amongst government offices and agencies --

9 THE COURT: You are going too fast.

10 MR. MOCZYGEMBA: I am so sorry.

11 **Q.** (By Mr. Moczygemba) An effective heat response plan
12 identifies at-risk individuals, right?

13 **A.** Oh, yes.

01:05:45

14 **Q.** An effective heat response plan involves coordination
15 among government offices and agencies, correct?

16 **A.** Absolutely.

17 **Q.** An effective heat response plan tracks the locations
18 of at-risk individuals, right?

01:05:56

19 **A.** Well, yes. As you mentioned before, they identify the
20 populations and, right, try to find out where they are.

21 **Q.** An effective heat response plan requires multiple
22 personal contacts with at-risk individuals, right?

23 **A.** Ideally, although many cities can't do that. Yeah,
24 absolutely, that's the best one.

01:06:10

25 **Q.** Well, many cities in America lack heat response plans,

1 don't they?

2 **A.** Not too many. I mean, I don't know what the numbers
3 are now. When I last did my survey, which was probably 12
4 or 15 years ago -- it is interesting, since you asked
5 that. All cities that have suffered heat wave have a good
6 plan.

7 **Q.** Right.

8 **A.** Many cities that haven't have either less than an
9 ideal plan or no plan.

10 **Q.** So that -- you are saying that the disaster happened
11 and then the cities came up with a plan, right?

12 **A.** Almost -- yes.

13 **Q.** That's common in your experience?

14 **A.** It is common in my experience.

15 **Q.** And I believe in your study about the cities that did
16 have heat response plans, that was only major cities that
17 you surveyed; is that correct?

18 **A.** Right. Yeah.

19 **Q.** So you don't know about all the cities across America,
20 whether or not they have heat response plans? You only
21 know about the major cities, right?

22 **A.** Sure. That's absolutely true.

23 **Q.** The vast majority of small cities across America may
24 not have heat response plans and you don't know?

25 **A.** That's absolutely true. I don't know that.

1 Q. An effective heat response plan makes sure that people
2 are aware of heat-related signs and symptoms and the
3 availability of mitigation measures, right?

4 A. Yes.

01:07:22

5 Q. An effective heat response plan advises people to
6 drink water?

7 A. Yes.

8 Q. An effective heat response plan makes sure that people
9 have access to water?

01:07:33

10 A. Yes.

11 Q. An effective heat response plan provides for access to
12 air-conditioned safe areas, right?

13 A. Yes.

01:07:44

14 Q. An effective heat response plan limits or eliminates
15 strenuous activity during the hottest part of the day,
16 right?

17 A. Yes.

18 Q. An effective heat response plan provides for wearing
19 light-colored clothing?

01:07:52

20 A. Yes.

21 Q. An effective heat response plan provides for frequent
22 cool showers?

23 A. Recommended, yes. It doesn't provide these things in
24 the -- you know, I mean, Minneapolis doesn't provide these
25 things; but it's part of the recommendation on how to deal

01:08:08

1 with heat for the individual.

2 **Q.** Right. So the heat response plans that -- yeah,
3 that's an important clarification --

4 THE COURT: Slow down. Slow down.

01:08:18

5 MR. MOCZYGEMBA: I'm sorry. I don't normally
6 talk that fast. Thank you.

7 **Q.** (By Mr. Moczygemba) Dr. McGeehin, I think you are
8 making an important point I would like to touch on. So
9 heat response plans are something that a local government
10 tells their people they should do, right? They don't
11 mandate anything?

01:08:29

12 **A.** Oh, no. They can't mandate it.

13 **Q.** An effective heat response plan provides for access to
14 medical care, correct?

01:08:46

15 THE COURT: Well, there again, I think -- are you
16 saying that it lines up doctors for the population?

17 MR. MOCZYGEMBA: Let me change that word. Let me
18 change those words to "should."

19 **Q.** (By Mr. Moczygemba) An effective heat response plan
20 should have access to medical care, right?

01:09:00

21 THE COURT: Well --

22 MR. MEDLOCK: Object.

23 THE COURT: I see the ambiguity in your question.
24 I'm sure that such a plan would recommend medical care.

01:09:18

25 But in terms of providing I think of that in terms of

1 having a citywide health insurance or something like that.

2 You don't mean that.

3 MR. MOCZYGEMBA: Let me rephrase, Your Honor.

4 I'll rephrase that.

01:09:28

5 **Q.** (By Mr. Moczygemba) Dr. McGeehin, you would agree that
6 it is -- an effective heat response plan should try to
7 provide medical care for at-risk groups, right?

8 **A.** Medical care should be available for at-risk groups
9 with as few barriers or no barriers, yes.

01:09:43

10 **Q.** And you would agree that an effective heat response
11 plan should allow for people to actually get to medical
12 care, right?

13 **A.** Yes. It should have some way to get them to medical
14 care.

01:09:55

15 **Q.** And if a government agency put all of these things
16 about heat response plans that we've just talked about
17 into one document, you would say that's an effective heat
18 response plan, correct?

01:10:10

19 **A.** I would have to read the document. But if it had all
20 the elements that I have been a proponent of for the last
21 12 or 15 years, then I would say that that's an effective
22 heat wave response plan.

23 **Q.** And if a government agency had -- I already asked you
24 pretty much the same thing. I'll spare you.

01:10:28

25 Dr. McGeehin, let's talk about the effectiveness of

01:10:47

1 some of the specific remedial measures that we just went
2 through. Okay. Just having access to air-conditioning
3 has been shown to be one of the most effective ways of
4 reducing the risk of morbidity and mortality during a heat
5 wave, right?

6 **A.** Yes.

01:10:56

7 **Q.** That was in a heat response plan -- I'm sorry. In
8 those studies that say just having access to
9 air-conditioning was shown to reduce risk effectively
10 during a heat wave, that was when people had the option of
11 going to air-conditioning; is that right?

01:11:12

12 **A.** If you mean the free-living population in the U.S. has
13 the option of going to air-conditioning, yes, of course.
14 But remember that was a study -- those studies were done
15 after the event. So it was to try to find out what their
16 access to air-conditioning was.

17 **Q.** Are there any studies in your booklet there that talk
18 about the effects of mandating access to air-conditioning
19 as part of a heat response plan?

01:11:25

20 **A.** There never would be because you can't in the United
21 States mandate that people go to air-conditioning.

01:11:39

22 **THE COURT:** What exactly is meant in "access to
23 air-conditioning space"? I mean, I know where this is
24 going in the prison context. But a lot of people have
25 access to it if they could afford a hotel room.

1 THE WITNESS: Right. That would be ameliorative,
2 Your Honor, yes.

3 THE COURT: Nobody has done that, provided hotel
4 rooms?

01:11:50

5 THE WITNESS: No. No. What they do provide
6 is -- the ideal plan identifies the communities, primarily
7 the elderly and other people that we have talked about for
8 the last whatever many hours, and then gets them access to
9 community centers, libraries, large auditoriums that are
10 air-conditioned for a period of two to three or four hours
11 a day.

01:12:08

12 THE COURT: Okay.

13 THE WITNESS: That's the ideal.

01:12:14

14 THE COURT: And I think you testified earlier
15 that they need to provide some kind of entertainment or
16 some kind of distraction to keep people coming back or
17 they wouldn't?

18 THE WITNESS: Yes, sir, or they don't.

01:12:28

19 THE COURT: But it wouldn't be necessary if --
20 that the affected population had the option of staying
21 there all night? That wouldn't be necessary?

22 THE WITNESS: It wouldn't be necessary based on
23 the epidemiologic data. It appears that access for a few
24 hours, three to four hours reduces the risk.

01:12:44

25 THE COURT: I see. That's what the prison is

1 offering here, I think.

2 THE WITNESS: Yeah. I'm not sure I have seen
3 those respite areas except in this. But, yes, I
4 understand that.

01:12:52

5 Q. (By Mr. Moczygemba) And, Dr. McGeehin, you said
6 something in response to the Judge's questioning. You
7 said the amount of time in air-conditioning could be two
8 or three or four hours; is that right?

01:13:05

9 A. Yeah. I think that our Chicago study and the
10 questionnaire asked for access three hours or more.

11 Q. But that's a debatable time period how long someone
12 has to spend in air-conditioning for respite; isn't that
13 right?

01:13:15

14 A. Absolutely. We're not certain about what that length
15 of time needs to be.

16 Q. Dr. McGeehin, when you worked for the Centers for
17 Disease -- well, let me strike that.

18 CDC is America's health protection agency, right?

19 A. Yes.

01:13:27

20 Q. And CDC's mission is to keep American --

21 THE COURT: Slowly.

22 Q. (By Mr. Moczygemba) The Centers for Disease Control's
23 mission is to keep Americans safe and healthy, right?

24 A. Yes. Yes. I guess. Yeah.

01:13:39

25 Q. And CDC has pledged to the American people that it

1 will base all of its public health advice on the highest
2 quality information, right?

3 **A.** Yes.

4 **Q.** And you did these things when you were at the CDC,
5 right?

01:13:51

6 **A.** Yes. I tried to, yes.

7 **Q.** And you did these things when you advised the American
8 people about how to respond to heat waves, right?

9 **A.** Yes, I did.

01:14:00

10 **Q.** And while you were at the CDC you published a paper
11 called "Municipal Heat Wave Response Plans," right?

12 **A.** Yes.

13 **Q.** That's in your booklet in front of you?

14 **A.** Yes.

01:14:12

15 **Q.** And your paper made recommendations as to cities
16 across the United States about effective heat response
17 plans, right?

18 **A.** Yes. I did that personally on the phone with many of
19 them, too, yes.

01:14:21

20 **Q.** And the recommendations in your paper apply to the
21 state of Texas, also, right?

22 **A.** Well, they are recommendations. They don't apply.
23 They are just out there for people to access and to use
24 whichever way they would like.

01:14:32

25 **Q.** You would recommend that people in Texas follow your

1 recommendations, right?

2 **A.** True. Yes. Absolutely, yes. Yes.

3 **Q.** Your paper only recommended providing access to
4 air-conditioning during a heat wave, right?

01:14:41

5 **A.** Yes. I mean, access to air-conditioning is part of
6 the heat wave response plan, yes.

7 **Q.** Your paper lacked the recommendation that all
8 Americans live in an air-conditioned building during a
9 heat wave, right?

01:14:54

10 **A.** Well, that recommendation would never be in. It was
11 never considered. No, it wasn't there. It wouldn't be.
12 I mean, if you are saying would that be ideal, that would
13 be ideal. But that's not reality.

14 **Q.** It's not reality for everybody to live in
15 air-conditioning?

01:15:09

16 **A.** No, it's not. We don't have that in the United
17 States. I don't see that happening in the next few
18 decades. You know, if you look at the census data, we're
19 seeing a larger and larger proportion of people living in
20 air-conditioned buildings. But if you want --

01:15:21

21 This is important for both you and the Court to
22 understand. When we're talking about a heat wave response
23 plan and when we're talking about reacting to heat, we're
24 talking about real-world problems with real-world

01:15:36

25 solutions. And if we were to come out with something that

1 can't happen, then that doesn't do anybody any good.

2 If we come out with something -- as you mentioned,
3 what CDC tries to do is base its recommendations on the
4 best available data. If we come out with a recommendation
01:15:52 5 based on the best available data that people need access
6 to air-conditioning in order to give their systems a
7 chance to regear, for lack of a better term, before they
8 go back out to the hazard, before they have to experience
9 the hazard, if that's the best we can do, then that's what
01:16:08 10 our recommendation is going to be. And it was supported
11 with a number of different studies, primarily the Chicago
12 study.

13 **Q.** And so when we were talking about your -- I'm going to
14 pull apart a few things that you said. I think you
01:16:19 15 already said this. I just want to make it clear on the
16 record.

17 And so, are you saying that the CDC also lacks a
18 recommendation that people live in air-conditioned
19 buildings in America; is that right?

01:16:29 20 **A.** No. We don't lack that recommendation. We never made
21 that recommendation. We have not made that
22 recommendation.

23 **Q.** Dr. McGeehin, let's --

24 **A.** Could I interrupt for just a moment?

01:16:47 25 **Q.** Yes, sir.

1 THE WITNESS: Is there any chance I could get a
2 bottle of water?

3 THE COURT: I'm sorry. We have one.

4 THE WITNESS: Thank you very much.

01:16:53

5 Q. (By Mr. Moczygemba) Let me give you a minute, and you
6 can get a drink.

7 A. I'm good. We can go on as long as I know that there
8 is some relief on the way. Thank you. Relief in water.
9 Relief in water. Thank you very much.

01:16:59

10 Q. Now you are making me feel bad. I feel bad for both
11 of you. I have been talking too fast and wearing you both
12 out.

13 All right. Dr. McGeehin, you talked on -- you talked
14 to Mr. Medlock about a Journal of the American Medical
15 Association study about people using fans that showed that
16 the fans worked, right?

01:17:40

17 A. Yes.

18 Q. And that study showed that fans worked for some
19 people, right?

01:17:49

20 A. It showed specifically that certain measures of
21 respiratory and -- excuse me, of perspiration and core
22 body temperature were affected by fans and increasing heat
23 and humidity for a number of young, college-age people.

24 Q. So is that a yes, fans do work for some people?

01:18:13

25 A. I don't know what "do work" means.

1 Q. I'm sorry. Yeah. That's a good point. Is that a
2 yes, fans work to cool people in a certain population?

3 A. Well, fans have always worked to cool people in a
4 certain population. It's just what temperature should
5 they no longer be recommended at.

01:18:28

6 Q. Dr. McGeehin, let's talk about the Phoenix study that
7 you spoke to Mr. Medlock about during -- before lunch.

8 A. Yes.

9 Q. 95 percent of the residents in the Maricopa County
10 area in the study had central air-conditioning in their
11 home, right?

01:18:49

12 A. I believe that is true.

13 Q. And so, the increases in mortality and morbidity
14 occurred in Maricopa County despite the fact that nearly
15 all of the residents had air-conditioning, right?

01:19:04

16 A. You are making an ecological assumption there. And
17 what you are saying is that just because the intervention
18 was there for 19 out of 20 people that that, in fact,
19 affected the people who showed up here. We don't know
20 that. Until you interview the people who made up these
21 trigger points, you don't know that it wasn't primarily
22 that five percent that doesn't have them.

01:19:17

23 Q. But you don't know that, right?

24 A. No. But it's an ecological fallacy. You can't make
25 that assumption.

01:19:33

1 Q. Nobody knows the answer to that question based on this
2 study, right?

3 A. Well, I -- based on what is the published study, I
4 don't know. The researchers probably know, but I don't
5 know.

01:19:40

6 Q. That information is not included in your study, is it?

7 A. It's not included in this report, no.

8 Q. And doesn't the Phoenix -- I'm just going to say "the
9 Phoenix study."

01:19:48

10 A. That's fine by me.

11 Q. Isn't it true that the Phoenix study explicitly says
12 that its findings may not be applicable in other settings?

13 A. Yes.

14 Q. Is that, again, going back to that -- doesn't it
15 specifically note the importance of acclimatization of the
16 Maricopa County residents?

01:19:59

17 A. Well, it discusses that. It also talks about the fact
18 that it used temperature and heat index interchangeably
19 because they are such a dry community. And so temperature
20 and heat index do not vary much in the desert. It might
21 not be applicable here, for example, where humidity may be
22 high, to use temperature as opposed to heat index.

01:20:16

23 Q. Dr. McGeekin, there were -- they also noted the
24 importance of acclimatization in the study, right?

01:20:33

25 A. I don't recall every word of it. He may have.

1 Q. But would you have any reason to disagree with me if I
2 said that the study notes the importance of
3 acclimatization?

4 A. No. But I would wonder how that affected anything
5 when the triggers that we saw here were the same triggers
6 that -- the same temperatures that we are seeing in the
7 National Weather Service chart. So if they are
8 acclimatized, they are suffering at the levels that we
9 would expect people to suffer these health outcomes at the
10 temperatures that the National Weather Service chart
11 includes.

12 So, you know, don't misunderstand me. Okay. I never
13 said acclimatization wasn't a role player here. The
14 questions you asked me I answered honestly.

15 Q. Sure.

16 A. Okay. So the role of acclimatization in dealing with
17 much of this stuff is not well understood.

18 Q. Fair enough. I was just asking -- and I'm not
19 suggesting that you were dishonest about that.

20 A. No. No. I know you weren't. I just want to be clear
21 about that.

22 Q. As did I. Just pointing out the study.

23 A. Okay.

24 Q. Dr. McGeehin, the Phoenix study found no consistent
25 association with cardiovascular morbidity at any

1 temperature metric, right?

2 **A.** Yes. That's true, right.

3 **Q.** So the effect of heat in terms of risk were different
4 for different people in different conditions; is that
5 right?

01:22:00

6 **A.** Yes. It found the strongest association with the
7 direct effects of heat.

8 **Q.** And I'm trying to understand something here; and so, I
9 might fumble over this a little bit. I appreciate your
10 patience. It looks to me, from all of the studies that
11 you have cited, except for the Phoenix study, that all of
12 those studies are dealing with heat waves; is that right?

01:22:21

13 **A.** Well, no. The studies that I cited where? In my
14 report?

15 **Q.** In your report, yes, sir.

01:22:36

16 **A.** That's probably true. However, there is a wealth of
17 information that looks at temperature and health
18 outcomes -- excuse me -- in something we call time-series
19 analyses that have been done.

20 **Q.** I'm sorry. That's not what I'm asking you.

01:22:48

21 **A.** Okay.

22 **Q.** Let me be clear. In your report you don't cite to any
23 studies that talk about, you know, the effects of heat
24 outside of heat waves except for the Phoenix study that we
25 have just talked about; is that right?

01:23:01

1 **A.** That may be.

2 **Q.** And looking at these recommendations that made -- I'm
3 sorry. So the Phoenix study was looking at the effects of
4 heat, not heat waves, right?

01:23:21

5 **A.** Right.

6 **Q.** Okay. And so, the Phoenix study recommends people
7 just have access to air-conditioning to reduce risk,
8 right?

01:23:37

9 **A.** Well, the main -- the main recommendation of the
10 Phoenix study is that these trigger points can now be used
11 by decision-makers to move forward with specific response
12 plans to try to ameliorate this problem. That's the main
13 recommendation from the Maricopa study.

01:23:58

14 **Q.** Well, let me ask it a different way. So the Phoenix
15 study lacks a recommendation that people live in
16 air-conditioned houses even after calculating the risk to
17 this population; is that right?

18 **A.** Oh, sure.

19 **Q.** Okay.

01:24:09

20 **A.** I need to -- maybe, this will help move. I don't know
21 of any recommendation by any public health study that's
22 ever been done that says people should live in
23 air-conditioned houses. I don't know of any. Now, there
24 may be some out there that I'm not familiar with, but I
25 don't know any.

01:24:24

1 Q. We're getting close. I'm just reviewing my notes. I
2 appreciate your patience.

3 A. Yeah.

01:24:51

4 Q. I'm going to go back to something you talked about
5 with Mr. Medlock before lunch. You testified about some
6 -- I'm not trying to put words in your mouth on this. I'm
7 just trying to get to the point. You testified about some
8 confusion that people might have from heat illness; is
9 that right?

01:25:04

10 A. Help me out. I mean, confusion about heat illness?

11 Q. Yeah. Well, basically, I think you were saying
12 something like, you know, people might be too confused to
13 make it to a respite area; is that right?

01:25:17

14 A. Oh, oh, oh, people who might be suffering from heat
15 illness may have cognitive impacts. Yes, I did say that,
16 yes.

01:25:33

17 Q. So with regard to the cognitive impact that you are
18 talking about from -- potentially arising from heat
19 illness, as to their symptoms and diagnosis, you would
20 defer to medical doctors who would offer testimony in this
21 case on that issue, right?

22 A. It depends on the medical doctor. It always depends
23 on the medical doctor.

24 Q. And that's fair enough.

01:25:42

25 A. If you were going to ask me to defer to a medical

1 doctor who came in with an outlandish, then I'm not going
2 to defer to that.

3 **Q.** But, generally speaking --

4 **A.** Yes.

01:25:49 5 **Q.** -- you are not a medical doctor?

6 **A.** No.

7 **Q.** You can't evaluate a patient --

8 **A.** No.

9 **Q.** -- to determine their cognitive ability, right?

01:25:54 10 **A.** No. No.

11 **Q.** So, generally speaking, you would defer to a doctor?

12 **A.** Oh, yes.

13 **Q.** Okay. Dr. McGeehin, you said in your deposition there
14 are very few risk-free environments that any of us are
01:26:15 15 ever in during our lives; is that right?

16 **A.** Yeah. That's been one of the tenets of my career.

17 Yeah. I mean, there is really no risk-free environment.

18 **Q.** And you would agree that government agencies don't
19 have to eliminate all risk, right?

01:26:31 20 **A.** I don't think it's possible to eliminate all risk.

21 I'm not even sure that it's ideal to eliminate all risk.

22 I mean, I think that the type of society that would result
23 from eliminating all risk might not work.

01:26:44 24 **Q.** I have a 4-year-old, and I would like to talk to you
25 after this. Let's save that.

1 **A.** I had a 4-year-old. It didn't work. So I really
2 can't help you.

3 **Q.** Okay. Now, you have never been a prison
4 administrator, right?

01:26:53

5 **A.** No.

6 **Q.** And you lack experience advising prison officials?

7 **A.** I certainly do.

8 **Q.** And you would agree that there are more risks to an
9 inmate's health than just heat in the summertime, right?

01:27:05

10 **A.** I do.

11 **Q.** Do you agree that it's reasonable for a prison
12 administrator to look at different risks in the prison
13 system?

14 **A.** Yes.

01:27:10

15 **Q.** And you would agree that it's reasonable for a prison
16 administrator to look at those risks and see what they can
17 address within the agency's budget, right?

18 **A.** Yes. As long as they are aware of what the real risks
19 are, yes. But they have to have that knowledge. In order
20 to compare risk, you have got to have knowledge of the
21 risk.

01:27:25

22 **Q.** Fair enough.

23 And you don't have to worry -- in making your
24 recommendation to the Court today, you do not have to
25 worry about the risk of prison safety, do you?

01:27:34

1 A. No. Of course not, no.

2 Q. And in making your recommendation to the Court
3 today --

01:27:43

4 A. Well, I'm sorry. Prison safety I do. I mean, that's
5 why I'm here.

6 Q. Let me rephrase that. In making your recommendation
7 to the Court today, you don't have to worry about the
8 other risks that are imposed --

9 A. No, I do not.

01:27:51

10 Q. -- from prison safety, right?

11 A. I do not. Competing risks, no.

12 Q. One of those, you don't have to worry about the risk
13 from violent offenders, right?

14 A. Not personally and not professionally, no.

01:28:12

15 MR. MOCZYGEMBA: Pass the witness.

16 THE COURT: Redirect.

17 MR. MEDLOCK: A little bit, Your Honor.

18 **REDIRECT EXAMINATION**

19 BY MR. MEDLOCK:

01:28:27

20 Q. Dr. McGeehin, in any study of inmates at the Pack
21 Unit, if there is 1,400 inmates at the Pack Unit, would
22 any study of them as a population be statistically
23 significant?

01:28:45

24 A. Well, it would depend on the odds ratio. You have to
25 understand that the power of a study is depending on what

1 risk you are finding.

2 For most of the risks that we see for -- excuse me --
3 morbidity and mortality related to heat, you would need
4 larger numbers than we see in the Pack Unit, which I think
01:29:03 5 is about between 1,400 and 1,500, right?

6 **Q.** That's right.

7 **A.** Right.

8 **Q.** Would you expect the statistical power of the study
9 done in Maricopa County to be more powerful than any study
01:29:17 10 at the Pack Unit?

11 **A.** Oh, by orders of magnitude, yes.

12 **Q.** Why are incarcerated populations typically excluded
13 from epidemiological studies?

14 **A.** Because -- for many reasons. Because access to
01:29:26 15 records and other reasons. Institutionalized populations
16 have historically not been included in free-living
17 epidemiologic studies.

18 **Q.** I want to be clear on this point, Doctor. Do you
19 consider the heat and humidity levels that we looked at
01:29:46 20 earlier from Professor Sager's analysis, do you consider
21 those levels to be hazardous to everyone across the board
22 at the Pack Unit, sick, well, young, old?

23 **A.** Yes.

24 **Q.** Doctor, would you expect the people in Maricopa County
01:30:07 25 who were studied in the Petitti study to be acclimatized

1 to the desert climate in Phoenix, Arizona?

2 **A.** Yes.

3 **Q.** Do you have any problem at all applying the lessons
4 from that study as a epidemiologist and one of the top
01:30:22 5 people -- former top people at the CDC to the people at
6 the Pack Unit?

7 **A.** I don't have any problem in talking about the risk
8 from heat and humidity to any population because of the
9 universality of what we found.

01:30:34 10 **Q.** Is there -- how many other risks in epidemiology is
11 the science as certain about as the risk from exposure to
12 high temperature and humidity?

13 **A.** I couldn't -- I couldn't answer that. I mean, there
14 are certain carcinogens that we are absolutely certain
01:30:52 15 that are directly related. Asbestos is directly related.
16 A single fiber of asbestos can cause lung cancer.

17 So, I mean, it's you're best not to do those kind of
18 comparisons. It's just -- I won't say it's a fool's
19 errand, but it's very difficult to support.

01:31:09 20 **Q.** Well, on the other hand, would it be fair to say that
21 there are a few areas that are as well settled as the risk
22 posed by heat?

23 **A.** Heat has a great deal of peer-reviewed evidence
24 supporting it, and it's consistent.

01:31:25 25 **Q.** Would an effective heat response plan include drinking

1 water with arsenic levels above the MCL?

2 **A.** Well, you are asking me two different questions there.

3 MR. MOCZYGEMBA: Yeah. Objection, compound.

4 THE COURT: Why don't you rephrase the question.

01:31:47

5 **Q.** (By Mr. Medlock) Let me rephrase the question,
6 Doctor.

7 MR. MOCZYGEMBA: And it exceeds the scope of the
8 cross, also.

01:31:58

9 MR. MEDLOCK: Well, Mr. Moczygemba asked if an
10 effective heat response plan should include a
11 recommendation to drink water.

12 MR. MOCZYGEMBA: That question did not include
13 anything about arsenic, Your Honor.

14 THE COURT: He is entitled to follow-up.

01:32:06

15 **Q.** (By Mr. Medlock) That's why I am following -- the
16 follow-up question, Doctor. Would an effective heat
17 response plan include drinking excessive amounts of water
18 if you knew that the water that was being drunk had
19 arsenic levels in it above the MCL?

01:32:21

20 **A.** I think -- my answer will probably be more direct and
21 simple than your question, but I understand why you asked
22 it that way.

23 As a public health person who has spent his whole life
24 in public health, I can't recommend that people drink

01:32:38

25 water that's above the MCL. I can't recommend it. I

1 can't say, yeah, drink that. Enforcement agencies can do
2 that.

01:32:53

3 But when you have a population that does not have
4 alternative water supplies and they have got something
5 above the MCL for ten years -- I mean, I have gone over
6 this before -- directing them to drink copious amounts of
7 water in order -- as one of the major interventions in the
8 response by, in this case, the Pack Unit, I cannot support
9 that.

01:33:12

10 **Q.** And to follow up on that, would you suggest that the
11 Pack Unit provide an alternative water supply until the
12 arsenic problem is fixed?

01:33:28

13 **A.** I would recommend that the Pack Unit fix the water
14 system as quickly as possible. And for these upcoming
15 months, I have to recommend that there is an alternative
16 water supply.

01:33:46

17 I'm not an enforcement agency. I'm not bound by those
18 sorts of issues. But it's above the MCL. I am
19 well-versed in how the MCLs are set. It's above the MCL.
20 It's not acceptable in the United States for drinking
21 water systems. Systems that don't make it are under the
22 gun to fix it at this point. So I can't recommend that
23 from a public health standpoint.

01:34:04

24 Now, there may be other parameters that need to be
25 brought in. But if you are asking me as a public health

1 person can I say to a captive population that you should
2 continue to drink this until we get it fixed, I can't
3 support that. How could I?

01:34:19

4 **Q.** I want to follow-up on the idea of it being a captive
5 population at the Pack Unit. I believe that you testified
6 to Mr. Moczygemba that in a city the city government can't
7 mandate everyone go through air-conditioning, right? Do
8 you recall that?

9 **A.** Of course. Right.

01:34:34

10 **Q.** That would be different in a prison where you do have
11 a population, a captive population, correct?

12 **A.** Again, I have been clear that I'm not familiar with
13 prisons; but my understanding is that for a prison
14 population, they mandate frequently where they go.

01:34:49

15 **Q.** Well, would you agree, though, that it's very
16 difficult for a city to eliminate a risk by taking people
17 to an air-conditioned space, whereas that would be a much
18 different calculation in a prison?

01:35:06

19 **A.** Yes. I'm cautious about the words "eliminate the
20 risk" but, yes, reduce the risk.

21 **Q.** Well, let's talk about eliminating the risk, too. Is
22 heat a risk that can be eliminated?

23 **A.** Heat deaths can be eliminated by access to
24 air-conditioning. And the reason I say that -- and people
25 say, What are you talking about? People say, Well, that's

01:35:24

1 true. Exertion deaths will still occur. The fools that
2 lock their kids in cars, unfortunately, that will still
3 happen. But the type of deaths that we have been talking
4 about can be eliminated with access to air-conditioning.

01:35:41

5 Now, ideally, as I talked about with the gentleman
6 that was at the podium before you, ideally, we would love
7 to say you live in an air-conditioned environment. That
8 would eliminate the risk. Heat is one of the few things
9 that we can point to something and say that eliminates the
10 risk.

01:35:55

11 **Q.** You would agree that when a government builds a
12 building and houses people in it, the government could
13 choose to eliminate the risk for those people with
14 air-conditioning, right?

01:36:06

15 **A.** As they are building buildings, certainly.

16 **Q.** In the south, how many -- what percentage of people
17 live in homes with air-conditioning?

18 **A.** I don't know.

19 **Q.** If you'll go to Tab 5 in your binder, I believe it's
20 Exhibit 8.

01:36:33

21 **A.** Okay.

22 **Q.** Page 370.

23 **A.** Yes.

24 **Q.** Hold on. I may have to find it. There is -- if you
25 would read that first -- just read to yourself -- the

01:37:08

1 paragraph in the middle column that begins "There is
2 evidence." See if that refreshes your recollection.

3 **A.** Yeah. Yes.

4 **Q.** Do you recall now how many homes in the south have
5 air-conditioning?

6 **A.** Well, I hate to say this to you; but I still don't
7 know the answer to that. I mean, I could if I grabbed the
8 census data and went through it and looked it up. But you
9 remember that this is a study that Jonathan and I wrote a
10 long time ago.

11 **Q.** In 2000?

12 **A.** Yeah. And 1995 was the census we were basing it on.
13 I showed in this study the increase in air-conditioning
14 over 30 years. Well, it's been 20 years since.

15 So my guess would be -- I don't really want to guess
16 in His Honor's court. Somewhere around 95 percent, but I
17 don't know that.

18 **Q.** To be fair to you, 20 years ago when you wrote this
19 study it was 90 percent, right?

20 **A.** It was 90 percent, and I was much younger.

21 **Q.** Is there a reason that CDC doesn't recommend living in
22 a house with air-conditioning?

23 **A.** Well, that's not --

24 THE COURT: He has already answered that. He
25 doesn't think that's a real world --

1 THE WITNESS: No, it's not.

2 THE COURT: -- a realistic option.

3 Q. (By Mr. Medlock) Then I'll end, Doctor, by asking:

4 Do you believe that the heat at the Pack Unit, the heat

01:38:40

5 and humidity, the heat index, makes the prison unsafe?

6 A. Do I believe that the heat and humidity? I mean, you

7 guys use terms differently than scientists do. I believe

8 that there is an unacceptable risk for the prison

9 population based on the numbers that I have reviewed,

01:39:04

10 which is based on the exposure that they have.

11 MR. MEDLOCK: Thank you, Doctor. We pass the

12 witness.

13 THE COURT: Any re-cross?

14 MR. MOCZYGEMBA: No, Your Honor.

01:39:10

15 THE COURT: You may step down. Thank you very

16 much, Doctor.

17 MR. MOCZYGEMBA: Thank you, Dr. McGeehin.

18 THE WITNESS: Thank you.

19 THE COURT: Do you have another witness you want

01:39:17

20 to call?

21 MR. EDWARDS: We do not, Your Honor. We have

22 Dr. Vassallo, but she will not be testifying until

23 Wednesday.

24 MR. SINGLEY: By scheduling agreement of counsel.

01:39:26

25 THE COURT: Very well. Do you have other things

1 you want to do this afternoon?

2 MR. GREER: Just for clarification, is the
3 evidence closed? Are we resting on the injunction, or is
4 Dr. Vassallo testifying also in support of the injunction?
5 That, I think, is not quite what we had agreed on.

01:39:36

6 MR. EDWARDS: I'm sorry. What? You did not
7 agree that Dr. Vassallo could testify on Wednesday?

8 MR. GREER: No, no, no. We said she was
9 testifying on Wednesday. But our understanding was that
10 you are presenting Mr. McGeehin on the injunction. But is
11 evidence closing on the injunction or is Dr. Vassallo also
12 offering evidence on the injunction?

01:39:48

13 MR. EDWARDS: What do you want to do? I hadn't
14 frankly considered that issue. I suspect that
15 Dr. Vassallo could present rebuttal evidence.

01:40:03

16 THE COURT: What is the area of her expertise or
17 his expertise?

18 MR. EDWARDS: Well, she is a toxicologist. I
19 suppose she could look at Dr. Honeycutt's essentially new
20 designation.

01:40:15

21 THE COURT: I'll allow her to speak to the
22 question of preliminary injunction.

23 MR. EDWARDS: If she does testify on that issue,
24 I can assure the Court that it will be brief and to the
25 point.

01:40:30

1 THE COURT: All right. You know, I'm -- after
2 hearing the testimony these last few days, clearly, I
3 think all of us are uncomfortable with the circumstances
4 in which these men find themselves. That's a long way
5 from saying I have a constitutional mandate to require
6 certain actions by the prison.

7 Can I be confident that to the extent they want to
8 go -- that the prisoners want to go to air-conditioned
9 space that it's mandatory for the staff to take them
10 there?

11 MS. BURTON: That's what Mr. Cody Ginsel
12 testified to yesterday, and that is the policy. It's in a
13 directive they have been -- which is considered an order
14 from the CID director.

15 THE COURT: Maybe you better come forward.

16 MS. BURTON: Yes, Your Honor. We had put in this
17 year's annual directive so every year -- you have heard
18 testimony from Mr. Ginsel yesterday and, of course, you
19 also heard the testimony of Mr. Livingston in his
20 deposition.

21 The TDCJ issues an annual e-mail after they have a
22 meeting with all the officials in different specialties of
23 TDCJ management. They meet. They write an annual e-mail.
24 That e-mail is a directive. And it is in evidence here
25 that we put in yesterday.

1 As Mr. Ginsel testified, a directive is the same thing
2 as a policy. Everybody in the agency has to obey that
3 directive. And I asked him several times yesterday what
4 would happen if they learned that either an officer was
5 not --

01:42:27

6 THE COURT: Following the directive?

7 MS. BURTON: -- following those directions. He
8 said, first, they would have informal counseling. And
9 then, if that didn't work, they would go through the
10 employee disciplinary process.

01:42:42

11 So, yes, that is a directive that the employees are
12 required to follow.

13 THE COURT: And is there space to accommodate all
14 of these men?

15 MS. BURTON: Yes, Your Honor. What we put in
16 yesterday is a chart that Mr. Ginsel -- I believe it was
17 Exhibit 2. It is a chart with the square footage of all
18 the air-conditioned respite areas in Pack Unit added
19 together so that if the warden or a higher-command
20 authority decided that there was a significant enough heat
21 event or an extreme heat event, there is room in the
22 respite areas for all of the offenders to be in respite.

01:43:18

23 But on a day-to-day basis, the way that they practice
24 when it's not an emergency is that they allow the
25 offenders who request it to go to respite upon request.

01:43:38

1 And then, the second thing that they do is they make
2 sure that the officers are performing the wellness check
3 to check on the offenders who are listed as the
4 heat-sensitive offenders. I think you have heard us talk
5 about how that chart is created. So they also go
6 face-to-face. They are physically in the presence of the
7 offenders and can say whoa.

01:43:59

8 And I believe you will recall that the warden has
9 testified that, you know, their practice at the Pack Unit
10 is to err on the side of caution because they do have
11 wheelchair offenders. They have, you know, some
12 chronically ill.

01:44:19

13 THE COURT: Well, the reference was made by the
14 defendants that there are many accommodations that need to
15 be made, including the violent offenders.

01:44:38

16 MS. BURTON: Correct.

17 THE COURT: I mean, does your -- with violent
18 offenders?

19 MS. BURTON: Yes. What Mr. Ginsel was trying to
20 say yesterday is that they don't want to put in a rule
21 that when the warden says, "Whoa. It's hot. These
22 offenders must go to respite" where the offenders have a
23 mandatory requirement to go because if an offender doesn't
24 want to go, how would they make him?

01:44:46

25 THE COURT: Well, that may be.

01:45:09

1 MS. BURTON: And that's a very big consideration
2 for them.

01:45:19

3 THE COURT: But in saying that there is respite
4 -- a respite area sufficient to accommodate all of the
5 inmates, that takes into account the different kinds of
6 groups of inmates, the violent offenders?

01:45:36

7 MS. BURTON: At Pack Unit, yes, at Pack Unit.
8 That's a G1 through G3. It's not -- you know, we're only
9 speaking about Pack Unit today. So at Pack Unit, yes,
10 they can accommodate them because they have a G1 through
11 G3 population.

01:45:56

12 When we were talking about violence, what we meant is
13 if an offender didn't want to go and the rule itself was
14 mandatory, you must make that offender go, then how would
15 they do it? They would have to use a use of force.

16 THE COURT: Yeah.

17 MS. BURTON: That's the violence that we're
18 talking about. Not that there is a specific problem. You
19 see what I'm saying?

01:46:07

20 THE COURT: I see. I see.

21 MS. BURTON: That would put both the offender and
22 staff at risk.

23 THE COURT: I thought you meant they were
24 violent.

01:46:15

25 MS. BURTON: No, Your Honor. There are, of

1 course, issues. Things can happen at Pack Unit, too. But
2 it's not one of our highest custody facilities.

3 THE COURT: You mean highest violence?

01:46:27

4 MS. BURTON: Yes. Correct. That's not our
5 highest level. Remember when he was talking about the
6 fences where they have double-barbed wire. Certain
7 offenders get sent to those kind of units. The Pack Unit
8 is not that kind of unit.

9 THE COURT: All right.

01:46:41

10 MS. BURTON: So it's G1 through G3, low level,
11 less -- you know, on average, less violent population.
12 But it's more of the confrontation that could occur. So
13 that's why TDCJ believes that it's most beneficial to
14 allow the offenders the access if they ask for it. And,
15 in fact, that's basically what the plaintiff said.

01:47:02

16 I don't know where all of this mandatory language came
17 in. But if you look at page 24 of their motion, they said
18 that the Court could require TDCJ to provide every inmate
19 an opportunity to rotate through an air-conditioned space
20 for three hours per day.

01:47:22

21 And as was testified to yesterday, that opportunity
22 already exists. That has already been done. So it's --
23 so it goes to our point that there is no emergency here.
24 That policy was put in place. It has been -- they have
25 gotten more experience with it, and it's fully in place

01:47:46

1 and implemented from the annual directive.

2 THE COURT: In terms of dealing with the heat,
3 though, how do I possibly say in an opinion that the
4 suggestion that the inmates drink more of this water is an
5 acceptable emergency plan? How can I tell them drink lots
6 of this water which has this arsenic level?

7 MS. BURTON: Well, Your Honor, I think that this
8 is a situation the -- twofold. One is that there were two
9 experts here who talked about that the levels of arsenic
10 that they are talking about, 10 parts per billion up to
11 about 25 parts per billion, that's a very, very low level
12 to begin with.

13 And there aren't good -- the statistics showing that
14 there is a potential harm are extremely tiny. They are
15 very, very tiny. We can't say that they are zero, but
16 they are about as close to zero as you can get.

17 So what the officials have said -- and we're talking
18 from three different or from -- well, two different state
19 agencies outside of TDCJ. Okay. Dr. Bojes is from the
20 State Health Services office. Dr. Honeycutt is from Texas
21 Commission on Environmental Quality. And they work with
22 the EPA. And those are all professionals in their field.
23 Dr. Honeycutt is a toxicologist. The EPA has
24 toxicologists. And they have made a decision that the
25 water is safe to drink and that it is not an emergency.

1 And the -- so I know that it sounds -- you know, it
2 would seem like it sounds hard in how you might think that
3 might look, but there has to be a realistic assessment of
4 harm. And the standard is substantial risk of harm.

01:50:06 5 The standard also requires that the Court give great
6 weight to the operation of the system, to the State's
7 position on this and they -- I think Mr. Ginsel pointed
8 out that there could be unintended consequences, other
9 problems that occur if you remove that water supply from
01:50:31 10 the offenders.

11 One of the most important, which he mentioned, is
12 there would be a great reduction in ice because they
13 simply would not be able to make the amount of ice that
14 they do right now for the offenders.

01:50:45 15 And so it will affect the unit on many levels when the
16 problem is basically very close to being solved. We're
17 very close to getting it completed.

18 THE COURT: Because of the remediation efforts
19 underway?

01:51:00 20 MS. BURTON: Yes. They have been working on
21 this. They have actually put in more than one system.
22 What they were trying to explain yesterday is that the
23 technology to remove this small amount of arsenic out of
24 the water has been very difficult to invent and engineer.
01:51:18 25 So it was not just that people were, you know, wasting

1 their time and not working on this.

2 THE COURT: Waiting for the technology to catch
3 up.

4 MS. BURTON: Yes. They have been working -- the
01:51:28 5 first technology that they tried did not remove that small
6 of an amount of arsenic from the water.

7 So, as a result, it has taken time. But we -- they
8 did finally in, I believe --

9 (addressing counsel) The last couple of years, Matt,
01:51:44 10 was it? I believe in the last couple of years -- if I'm
11 wrong tell me.

12 MR. GREER: No.

13 MS. BURTON: They had to put in test systems
14 because they didn't want another expensive system bought
01:51:56 15 that couldn't be approved of because it didn't remove the
16 arsenic, and they put in all these test systems and have
17 worked very closely with TCEQ and finally gotten the
18 system approved. They found one that is supposed to work,
19 and it should be installed by January.

01:52:17 20 THE COURT: Okay.

21 MS. BURTON: So that's where we are at. The
22 State does not believe there is an emergency here, Your
23 Honor. We believe that -- we argue or we are presenting
24 to you that the plaintiffs have not met their burden to
01:52:28 25 show the substantial risk of harm that is required and

1 that the State should be given deference by this Court.

2 THE COURT: Thank you very much.

3 Mr. Edwards.

4 MR. EDWARDS: May I respond, Your Honor?

01:52:40 5 THE COURT: Yes, you may.

6 MR. EDWARDS: There was a lot thrown out there;
7 and so, I ask you to bear with me somewhat.

8 THE COURT: Yes.

9 MR. EDWARDS: For starters, with regards to the
01:52:55 10 arsenic levels, in the deposition that I took of
11 Dr. Bojes, crystal clear you should not serve this water
12 to the people at the prison Pack Unit. While she waffled
13 a bit, at the end of the day, if you review the testimony,
14 she acknowledged that there is an elevated risk of cancer,
01:53:16 15 albeit a small risk of cancer.

16 That really is beside the point in terms of what Your
17 Honor is being asked to do. The fact is the maximum
18 contaminant level, as cited by EPA, is 10 parts per
19 billion of arsenic. It is to protect against the risk of
01:53:37 20 cancer, low risks of cancer, high risks of cancer. The
21 fact is they have got a mitigation plan that they know
22 that requires them, unfortunately though it may be,
23 requires them to serve water with dangerous levels of
24 arsenic. It may be a small risk of developing cancer, but
01:54:02 25 it nevertheless is.

1 And in terms of -- and that's just the MCL, the
2 maximum containment level. And an expert -- I guess an
3 enforcement person from TCEQ -- came in and said, I guess,
4 he didn't think it was that big a risk. But the fact is
5 they have had ten years.

01:54:20

6 And so, if Your Honor says it is okay to continue
7 serving this water, that opinion goes to for ten years
8 they have done something that is wrong, that they know to
9 be wrong.

01:54:41

10 THE COURT: What has made it an emergency now?

11 MR. EDWARDS: Well, nothing has made it an
12 emergency that didn't make it an emergency when we first
13 took -- in February. So if you want to criticize me for
14 not doing my motion faster --

01:54:56

15 THE COURT: Ten years, why has nobody challenged
16 it for ten years?

17 MR. EDWARDS: It's prison litigation. As you can
18 see, we litigate to the hilt on every single issue under
19 the sun and, you know, I don't know. Okay. All I do know
20 is that when I learned that this had been going on for ten
21 years, I felt compelled to come to this Court.

01:55:11

22 Now, you heard from a former division director of
23 environmental hazards at the CDC --

24 THE COURT: He was a very effective witness.

01:55:30

25 MR. EDWARDS: -- who said in no uncertain terms,

1 we can't recommend this. What differentiates this in my
2 mind from, let's say, ten years ago, before it was so well
3 known of the epidemic of heat deaths or the high number of
4 heat deaths is that now we know. And they admit there is
01:55:50 5 a substantial risk of death and illness from the heat
6 without mitigation -- without proper or effective
7 mitigation measures. We're here to debate the
8 effectiveness of the mitigation measures.

9 But what can't be allowed to happen is that their
01:56:10 10 chief or principal mitigation measure be allowed to -- you
11 know, "poison" sounds like a strong word; but that's what
12 it is. It's poisoned water. And the excuse is, well,
13 come on. It's just a small risk of cancer. And I would
14 respectfully submit to the Court that when you are
01:56:30 15 evaluating whether a risk is substantial, you measure it
16 by the percentage of likelihood that it's going to happen
17 with the severity. It isn't a small risk that they are
18 going to get a cold --

19 THE COURT: No. Cancer.

01:56:44 20 MR. EDWARDS: -- or pneumonia. I know that you
21 understand this import. I feel it's important. Because
22 what I think what is really strongly in our favor is the
23 fact that disinterested -- well, I can't say that. But
24 certainly an expert that I would put up against the two
01:56:59 25 that you heard yesterday on this issue and the length of

1 time.

2 And what seals the deal for me is the ease with which
3 you can solve this problem. You heard testimony from
4 Mr. Ginsel. They have three tanker trucks. Or if they
5 don't want to use the ones they already have, get on the
6 telephone and lease a truck and bring it with water.

01:57:18

7 And the burden you heard about was that ice might be
8 compromised. Well, use some of the water you bring in for
9 the ice or cool it down or put it in a refrigerator or go
10 to 7-Eleven and buy some bags of ice. This is not an
11 insurmountable problem.

01:57:40

12 The reason we thought that it was important enough to
13 style it as an emergency now was because, unlike
14 air-conditioning, it doesn't require a capital
15 expenditure. It doesn't require you to do much in the way
16 of, you know, reinventing the prison system. All you have
17 to say is, look, if a governmental agency says there is a
18 maximum contaminant level and you know about it and you
19 don't fix it for a reasonable period of time or for an
20 unreasonable period of time, then that's not good enough
21 because what is going to happen is what happens all the
22 time.

01:58:00

01:58:19

23 If you say, That's fine. Fix it January, June,
24 whenever the construction -- whenever the seasons allow
25 but just give them until then, it may get fixed or it may

01:58:35

1 not.

2 THE COURT: Well, that is always a risk. I mean,
3 I work for the government. I know sometimes things don't
4 happen on schedule. I know that.

01:58:48

5 MR. EDWARDS: But what is -- but if the LA
6 freeway can be rebuilt in three months, a filtration
7 system can be put in in ten years. And it would be -- it
8 would be an appropriate statement for this Court to say if
9 water is what you are going to do to protect inmates from
10 heat, it ought to be safe water. End of story. Order an
11 alternative water source or supply until it's fixed. It
12 will give them the incentive to get it fixed faster. And
13 then, we move on to the more substantive issue of heat.
14 And they have done this before at other prisons. This is
15 not -- if a water system goes out, they have to fix it.

01:59:06

01:59:25

16 Now, with regard, if I may --

17 THE COURT: Yes, sir.

18 MR. EDWARDS: -- on the heat. What I don't want
19 to -- there is testimony that comes pretty close from
20 Mr. Ginsel that the Pack Unit is obligated to make respite
21 areas available at all times. That is what I heard. But
22 that is not what their policy or their directive actually
23 says.

01:59:45

24 And if I may approach, Your Honor?

02:00:05

25 THE COURT: Give it to Ms. Loewe, if you would.

1 MR. EDWARDS: It's the precaution e-mail -- I
2 only have one copy -- from 5-6-16.

3 THE COURT: Read it to me so everybody can hear
4 it at once.

02:00:18

5 MR. EDWARDS: "During the extreme temperature
6 months offenders must be allowed access to respite areas
7 in late afternoon" --

8 THE COURT: Slow down. "Late afternoon."

02:00:29

9 MR. EDWARDS: -- "and early evening hours or, if
10 necessary, more frequently."

11 That is not on-demand access to air-conditioning. It
12 is not mandated air-conditioning, as you heard was
13 necessary today. And what is really important about that,
14 this was just done in May of this year. Conveniently
15 before this hearing.

02:00:54

16 In two depositions in 2015 of their risk manager and
17 the major at the Pack Unit, in July of 2015 and August of
18 2015, they had everybody going to the medical department
19 before they went to a respite area.

02:01:16

20 "Major McLaren, so, really, using those as a respite
21 area is, I'm going to pull you out of the heat. I'm going
22 to have an officer sit with you until we have medical
23 come" --

24 THE COURT: Slow down.

02:01:28

25 MR. EDWARDS: -- "and look at you." Excuse me.

1 "ANSWER: I'm going to immediately initiate the ICS
2 system and then have medical respond so we can take care
3 of the offender."

4 Major McLaren was treating these requests to go to
02:01:40 5 air-conditioning as a medical problem not an I would like
6 to get out of the heat.

7 Deborah Allison, the risk manager at the Pack Unit,
8 August of 2015, testifying, as I might add, the corporate
9 representative of TDCJ.

02:02:00 10 "If I'm an inmate who feels hot and I request one of
11 your respite areas, what I hear you telling me is I'm
12 taken to medical?"

13 "Yes."

14 Now they have changed that, but I don't want the
02:02:14 15 Court -- without the order from the Court requiring
16 something to happen, this is just a piece of paper that
17 they can say -- that they can say they will do. But what
18 is on this piece of paper is not what Mr. Ginsel testified
19 to, and it's not what has been represented is going to
02:02:32 20 happen.

21 And if you want to eliminate the substantial risk,
22 something of consequence, an order, I will tell you the
23 inmates do not believe they can just go whenever they want
24 to air-conditioned spaces.

02:02:50 25 We might begin with an order instructing TDCJ to

1 inform in a way that can be verified where every inmate
2 signs off after 30 minutes of training, making darn sure
3 that whenever they like, whenever they feel the need, they
4 can go to a respite area. And then the Court will find
5 out if these respite areas are real.

02:03:11

6 What you heard from Mr. McGeehin or Dr. McGeehin was
7 it's not just space. It's not, you know, I'm going to go
8 inside to a closet that has 25 square feet.

9 THE COURT: Yeah. They need to do something that
10 makes it inviting.

02:03:28

11 MR. EDWARDS: It's not just makes it inviting,
12 but makes it -- it makes it not like torture. I mean, you
13 are asking -- if what you are doing is literally saying
14 there is a closet outside, a bathroom over there and a
15 room in the jury room over there but with nothing there,
16 that or the bed, the place you have your stuff.

02:03:43

17 THE COURT: Well, but, unfortunately, they don't
18 possess a lot of entertainment options in the best of
19 situations. I mean, they're -- I have been to the prison.
20 There are beds lined up. There is one TV, I guess.

02:04:01

21 MR. EDWARDS: Again, we're not asking this Court
22 to turn a prison into a pleasure palace or some sort of
23 hotel environment. But a table, some chairs, some
24 dominoes, whatever they think -- and this we defer to the
25 prison, whatever they believe is appropriate. But what is

02:04:23

1 key is that all fourteen -- what the benches or the
2 bedding or the tables do is it allows the socialization
3 process. It allows -- it allows them to congregate in a
4 way that isn't essentially, yeah, you can go; but why
5 would anyone go?

02:04:44

6 Finally, one of the dangers that you heard a lot about
7 that everybody has agreed about is heat waves. They do
8 not have a heat wave policy. You have heard Mr. Ginsel
9 pretend that they did.

02:05:10

10 If I could hand that to you.

11 This is one of the few documents that they haven't
12 made change after change after change following the
13 lawsuits. This goes back to 2003. You heard Mr. Ginsel
14 say he is not aware of a single time any warden has ever
15 done this with regards to a heat wave. That's after 2011.
16 Not once. It doesn't work.

02:05:29

17 So something the Court could order is create a heat
18 wave plan or an extreme heat wave plan that is written by,
19 you know, appropriate experts in the field. That is
20 something the Court can order.

02:05:55

21 The Court can order trained -- order that all inmates
22 be trained.

23 And, again, I don't mean to belabor this. But it is
24 so important not because you care about what is going on
25 at the prison system at all.

02:06:13

1 THE COURT: No. I do. I do care about it.

2 MR. EDWARDS: And I know you do. I know you care
3 about the Constitution, and I know that you are obligated
4 to follow the law. And the law is that we have to show
02:06:25 5 either a substantial risk of harm, which I think the heat
6 is a given. And I think that intentionally subjecting
7 someone to a low increased risk of cancer gets you there.

8 Or is what they are doing -- this is particularly
9 pertinent on the arsenic -- violating contemporary
02:06:49 10 standards of decency? That is the other trigger. And,
11 again, they are on purpose feeding water, in order to cure
12 another ill, that contains an elevated carcinogen that
13 increases how our --

14 THE COURT: Is it an Eighth Amendment violation?

02:07:17 15 MR. EDWARDS: Sure.

16 Ultimately, you'll get to make that decision. But the
17 facts are undisputed. And when you combine the length of
18 time that they have not solved this problem with the
19 length of evidence as to why and trot in an expert who
02:07:32 20 says, Well, I don't agree with the cancer slope anymore
21 and I'm going to pick one thing that IARC says and I'm
22 going to disregard another.

23 And they have a form document that says it's not an
24 emergency. Well, whether it's -- whether it's an
02:07:50 25 emergency on that form document or not, it is

1 intentionally subjecting someone to a carcinogen that
2 does, in fact, according to their own expert, give them a
3 small but real --

02:08:03

4 THE COURT: I do understand that. I do
5 understand that.

02:08:22

6 MR. EDWARDS: And I know you do. But, anyway,
7 there are things that can be done. The burden on TDCJ is
8 very low. And unless there is an order testing that
9 proposition, leaving aside what we would consider the
10 importance of mandatory air-conditioning, because unlike
11 the free-world population, this is something that can be
12 solved.

13 THE COURT: Okay. I've got you.

14 MR. EDWARDS: Thank you, Your Honor.

02:08:34

15 THE COURT: Mr. Greer.

16 MR. GREER: Your Honor, I want to respond briefly
17 just on the arsenic issue.

18 THE COURT: Yes, sir.

02:08:53

19 MR. GREER: And Ms. Burton will respond to the
20 injunctive issue.

02:09:09

21 It went through in the testimony yesterday -- and,
22 actually, to take issue with something that Mr. Edwards
23 just said, his own expert today, from the stand today,
24 just testified that the time frames that we're talking
25 about here in these cancer rates are decades. I think he

1 used the term "70 years."

2 THE COURT: Using that as a life-span, I guess.

3 MR. GREER: Life-span.

4 This isn't something that just our expert

02:09:22

5 cherry-picked or somehow -- all three experts that have

6 come in here from both sides have agreed to that fact.

7 He also agreed, plaintiffs' own expert, that there is

8 controversy in the scientific validity of this

9 cancer-causing effect at the low levels we're talking

02:09:38

10 about here.

11 And the evidence that the plaintiffs keep citing to,

12 despite the fact that all three experts agree if there is

13 any -- agree that there is serious doubt about the

14 scientific validity of that, that the cancer slope that

02:09:52

15 you are being given here by Dr. Bojes is infinitesimally

16 small, .05 cases. You would have to multiply the Pack

17 Unit population by 20 to even get you to one person.

18 That's assuming the cancer slope is accurate, which all

19 three experts have said they doubt.

02:10:12

20 Now, in addition to that, one of the most important

21 things that came through in the testimony yesterday is the

22 language from the public notice to the inmates. This is

23 not an emergency. You do not need an alternative water

24 source is what the EPA instructs. There are 65 water

02:10:29

25 systems, not just the Pack Unit, in the state of Texas

1 that are still above this standard. You heard from both
2 experts on both sides testify they are throughout the
3 country still above this standard.

02:10:44

4 There is -- Mr. McGeehin testified today there is, I
5 think, hundreds in California that are still struggling to
6 get the right technology in place to fix this.

02:10:58

7 THE COURT: Can we make that comparison with the
8 free world and the captive population? I mean, people in
9 those water districts would have an opportunity to use
10 other kinds of water, wouldn't they?

11 MR. GREER: They would. Water is available from
12 the TDCJ commissary at 30 cents a bottle.

13 THE COURT: Well, these guys don't have money to
14 buy that.

02:11:08

15 MR. GREER: Your Honor, when we return to the
16 office, we will file some supplemental briefing that shows
17 the commissary records of the named plaintiffs in this
18 case. You will see that they are buying things, and none
19 of them are buying bottled water. They are buying things
20 like Gucci soap instead of water.

02:11:21

21 So the notion that the inmates are overly concerned
22 about this, I think, is being -- it gets a stretch when
23 you look at what they are doing with their commissary
24 purchases, which are actually limited.

02:11:38

25 So the issue here, though, is you are being asked to

1 overrule the EPA. You are also being asked to not only
2 rule in a way that would affect this system but 65 other
3 systems in Texas and other systems throughout the country.
4 And there is no litigation or no -- no one could come up
02:11:54 5 with any litigation or other court or other instances in
6 which the judiciary has decided that they had to overrule
7 the EPA on this point.

8 So I think that's all I have, and I'll let Ms. Burton
9 respond on the injunctive issues.

02:12:13 10 THE COURT: Anything you want to say, Ms. Burton?
11 I think you've covered what needs to be covered.

12 MS. BURTON: Yes, Your Honor.

13 THE COURT: Okay. Mr. Edwards, do you have
14 something else?

02:12:20 15 MR. EDWARDS: Just that this happens a lot with
16 the argument and the evidence not being -- to suggest that
17 that form letter is a ruling by the EPA just is -- it is
18 simply not. It is a form letter. That's all it is. It's
19 sent to them.

02:12:41 20 Anyway, I think you understand our position. If you
21 think I need to address any points, I would be happy to.

22 THE COURT: When do we reconvene? Wednesday?

23 MR. SINGLEY: Yes, Your Honor.

24 THE COURT: 9:00 a.m.? Does that work for
02:12:53 25 everybody?

1 MR. SINGLEY: Yes, Your Honor.

2 THE COURT: Thank you.

3 *(Proceedings adjourned at 2:12 p.m. and continued in*
4 *Volume 3.)*

5 *Date: June 7, 2016*

6 ***COURT REPORTER'S CERTIFICATE***

7 *I, Laura Wells, certify that the foregoing is a*
8 *correct transcript from the record of proceedings in the*
9 *above-entitled matter.*

10

11 /s/ Laura Wells

12 *Laura Wells, CRR, RMR*

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